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DEPARTMENT OF THE ARMY TECHNICAL MANUAL

USE AND INSTALLATION OF BOOBYTRAPS

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USE AND INSTALLATION OF BOOBYTRAPS

			Paragraphs	*Page*
CHAPTER	1.	INTRODUCTION	1–5	3
	2.	PRINCIPLES OF EMPLOYMENT		
Section	I.	Use in warfare	6, 7	6
	II.	Basic doctrine	8, 9	7
	III.	Employment	10, 11	8
	IV.	Boobytrap peculiarities	12, 13	8
	V.	Safety	14, 15	12
CHAPTER	3.	PRINCIPLES OF OPERATION	16–23	15
	4.	BOOBYTRAP MATERIALS	24–29	32
	5.	STANDARD AMMUNITION ITEMS		
Section	I.	Demolition materials	30–36	36
	II.	Firing devices	37–42	44
	III.	Missiles	43–45	64
CHAPTER	6.	CARE AND PRESERVATION	46–51	12
	7.	BATTLEFIELD EMPLOYMENT		
Section	I.	Planning	52–57	16
	II.	Installation	58–60	80
	III.	Detection and removal	61–69	86
CHAPTER	8.	BOOBYTRAPPED MINES IN MINEFIELDS	70, 71	101
CHAPTER	9.	BOOBYTRAPPING STRUCTURES		
Section	I.	Buildings	72–75	106
	II.	Equipment	76–78	114
CHAPTER	10.	BOOBYTRAPPING TERRAIN		
Section	I.	Highways, trails, and paths	79, 80	123
	II.	Special areas	81, 82	126

		Paragraphs	Page
CHAPTER 11.	BOOBYTRAPPING OBJECTS		
Section I.	Manufactured boobytraps	83–85	133
II.	Improvised devices	86, 87	141
CHAPTER 12.	FOREIGN BOOBYTRAPS		
Section I.	British materiel	88, 89	145
II.	German materiel	90, 91	146
III.	Soviet materiel	92, 93	151
IV.	Chinese Communist and North Korean materiel	94, 95	153
V.	Japanese materiel	96, 97	162
CHAPTER 13.	TRAINING	98–104	168
APPENDIX I.	REFERENCES		174
II.	GLOSSARY		175
INDEX			177

CHAPTER 1

INTRODUCTION

1. Purpose

The purpose of this manual is to provide a compilation of procedures, techniques, and expedients pertaining to combat employment of boobytraps that will instruct an individual soldier in the use, methods of installation, and procedures for detecting and removing boobytraps.

2. Scope

a. This manual covers the principles of construction, methods of use, and procedures for the detection, installation, and removal of boobytraps. Describing standard items of issue suitable for use in making boobytraps, the manual is adequate to instruct an individual soldier in the actions generated by important component parts, and the functions they perform in boobytrap designs.

b. Safety procedures are described which emphasize the precautionary measures that must be observed by an individual soldier, either when making and installing boobytraps, or when fighting in a combat area where enemy-installed boobytraps may be expected. Information is also given on methods for disarming and neutralizing boobytraps, and for disposing of hazardous explosives.

c. Guidance also is provided to assist in the organization of boobytrap training programs for military personnel.

3. Related Publications

Military publications cover a wide range of topics related to military explosives. FM 5–25 describes the various explosives available to United States field forces, their use, handling, storage, and transportation. TM 9–1900, T M9–1910, and TM 9–1940 also contain information on explosive items, and are useful and of general value to personnel employed in the use of boobytraps.

4. Boobytraps and Their Components

a. A *boobytrap* is an explosive charge which is exploded when an unsuspecting person disturbs an apparently harmless object, or performs a presumably safe act. Boobytraps usually are made from materials available in a combat area. Normally they are improvised to be most suitable to serve conditions that prevail at the time and place. An elementary boobytrap consists of a small charge of high explosive, a detonator, and a firing device. Boobytraps are an outgrowth of the "nuisance mine" technique.

b. A *manufactured boobytrap* is a device of the dirty trick variety that is constructed in its entirety at a production plant for distribution to the armed forces. Such devices may be left by withdrawing combat forces or they may be air-dropped behind enemy lines. These objects usually are designed to imitate some useful article that appeals to a soldier's desire for possession.

c. A *fuze* is a device used to initiate a detonation under the conditions desired. Fuzes employed to detonate high-explosive charges are most commonly used with shells, mines, or bombs, and are provided in many forms and sizes. Some designs provide for instantaneous action when functioning is initiated, while other designs permit a definite time lag from a fraction of a second to many hours. Delays are produced by a clockwork mechanism, by chemical action or — as in hand grenades — by chemical action. There is a distinction between *fuze,* as defined above, and *fuse,* a burning device for igniting blasting caps, firecrackers, or similar items.

d. A *firing device* is a mechanism designed to initiate a train of fire or detonation in boobytraps, mines, or demolition charges. It is generally a separate item of issue. When fitted with a non-electric blasting cap it may be used as a mine fuze, anti-lift device, or to set off prepared explosive charges. Methods for operating firing devices include pull, pressure, release, or various combinations of these. Ignition may result from spring-propelled strikers, chemical action, friction, or electrical action. Similar devices used in foreign armies are called fuzes, switches igniters, etc.

e. A *detonator* is a high explosive element used in an explosive train to create or transmit a detonation wave to a booster or a main charge of high explosives.

5. Explosives

a. An *explosive* is any mixture or compound which, when subjected to heat, impact, friction, or other suitable initial impulse, undergoes a very rapid chemical transformation, forming other more stable products entirely or largely gaseous, whose combined

volume is much greater than that of the original substance. Explosives are classified as *high* or *low* explosives according to the rate of the transformation.

b. A *high explosive* (detonating explosive) is an explosive in which the chemical transformation occurs practically instantaneously, and the phenomenon accompanying this class of decomposition is termed a detonation. High explosives, due to their high rate of decomposition, are used as main or bursting charges in grenades, bombs, or in any instance where shattering rather than pushing effect is desired.

c. A *low explosive* (propellant) is an explosive in which the decomposition rate is sufficiently low that it may be used as a propellant. The explosion created by low explosives produces a pushing effect as compared to the shattering effect of high explosives.

CHAPTER 2

PRINCIPLES OF EMPLOYMENT

Section I. USE IN WARFARE

6. Pre-Korean Wars

a. Employment of fiendish mechanisms in warfare is not new. Since earliest recorded history man has devised cunning traps to foil an enemy. The Trojan horse was a form of boobytrap to catch an unsuspecting foe. Modern mechanizal achievements have provided a wide variety in articles of deception and future wars are most likely to see an ever-increasing use of dirty-trick devices.

b. While most major wars have seen the use of boobytraps of one kind or another, their use in a strictly modern sense started near the end of World War I. During the stagnant trench warfare period, trenches changed sides frequently. First mines were used to intercept raiding parties and later boobytraps were added to further confuse enemy patrols. When tanks were introduced into combat, antitank mines soon followed, and again trick devices were added in attempting to improve mine effectiveness. Mines and boobytraps used in World War I were largely battlefield improvisations.

c. Between 1918 and 1938, U.S. armed forces showed little interest in either mine warfare or the use of boobytraps. It was not until the autumn of 1939 that mine warfare coupled with the use of boobytraps became a subject of important military interest in the United States.

d. Mines and boobytraps were continued in use by Germany and to a considerable extent by Japan throughout World War II. While Allied forces used land mines extensively, beginning with the British in their North African campaign in World War II, boobytraps, other than in minefields, were not employed in great numbers by Allied forces except by the Russians.

e. In a war of movement, when success permits practically a continuous forward advance such as occurred in many of the later Allied advances across Europe, advantages in the opera-

tional employment of boobytraps naturally favor an army in retreat. Boobytraps were valuable only as they introduced delay in the forward movement of attacking forces, by inflicting casualties and lowering morale of enemy troops.

7. Korean War

a. Enemy forces in North Korea used such a variety of mines, both antitank and antipersonnel, many of them improvised, and so many different triggering devices, that it was sometimes difficult to draw a clear distinction between their mines and boobytraps. Whenever they used mines, invariably some mines were equipped with boobytrapping devices.

b. The first boobytraps employed by the NKA were simple devices. Often placed ineffectively, they were subject to easy detection. As the campaign progressed, however, the enemy became quite proficient in employing boobytraps. Mines and boobytraps employed by U.N. forces during this period also were not particularly effective, largely due to lack of training in mine warfare tactics. On the northern march of U.N. forces towards the Yalu River, the NKA made rather extensive use of mines and boobytraps.

c. When Chinese communist forces (CCA) entered the Korean War, they apparently did not anticipate fighting defensively, since there is no evidence that mines or boobytrapping materials were brought with them. During their withdrawal in early 1951, however, the Chinese employed land mines and boobytraps at every opportunity, mostly captured or improvised.

d. Boobytraps in North Korea were found in abandoned equipment, buildings, vehicles, tanks, or almost any other installation. Every worthwhile object left behind was a probable boobytrap.

e. Thus revealed by the Korean War is a continuing tendency toward increased warfare employment of boobytraps. Whether such tactics stem from wily Oriental cunning or from the mechanical ingenuity of European or other artisans, future enemies may be expected to employ many varieties of boobytraps.

Section II. BASIC DOCTRINE

8. Boobytrap Warfare Principles

a. Creating uncertainty and suspicion, boobytraps supplement minefields in providing obstructions that cause confusion, inflict casualties, destroy materiel, and lower morale of enemy forces.

b. Boobytraps normally are installed by engineer troops, infantry pioneer troops, or other personel suitably trained for this work. All military personnel will, however, be the sufficiently

trained in handling explosives so as to be able to boobytrap a mine or install simple boobytraps.

9. Field Commanders Authority

a. A theater commander will amplify Department of the Army policy by issuing special instructions regarding employment of boobytraps within his sphere of command. Supplies will be authorized and provided as required to meet boobytrap needs in accordance with such instructions.

b. Whenever boobytraps are used, records will be prepared and forwarded to higher headquarters (par. 60).

c. As soon as discovered, the existence of an enemy boobytrapped area will be reported to higher headquarters so as to keep all interested troops advised of the nature of enemy activities. Whenever opportunity permits, all such devices will be neutralized. Pending such action, all enemy installed boobytrapped areas will be adequately identified by warning signs.

Section III. EMPLOYMENT

10. Authority for Employing Boobytraps

Army and higher commanders have the authority to employ boobytraps. This authority may be delegated not lower than division commanders. Only commanders having *authority to employ* boobytraps may order that boobytraps be installed. Any commander may *install* boobytraps if so directed by a commander who has authority to employ boobytraps. All higher commanders may revoke, for either a definite or indefinite period, the authority of subordinates normally authorized to employ boobytraps. Thus, an army group might revoke indefinitely all boobytrapping during a planned offensive.

11. Authorized Areas

Directives authorizing the installation of boobytraps will be specific in designating approved areas. Once emplaced, boobytraps limit the area of movement and restrict combat operations by friendly forces.

Section IV. BOOBYTRAP PECULIARITIES

12. A Boobytrap's Potential

a. A well designed and properly installed boobytrap is an extremely deadly contrivance (fig. 1). While thousands of tons of bombs and shells may waste their lethal capabilities on uninhabited areas or where men find safe protection, a boobytrap always springs suddenly upon an unwary victim and strikes

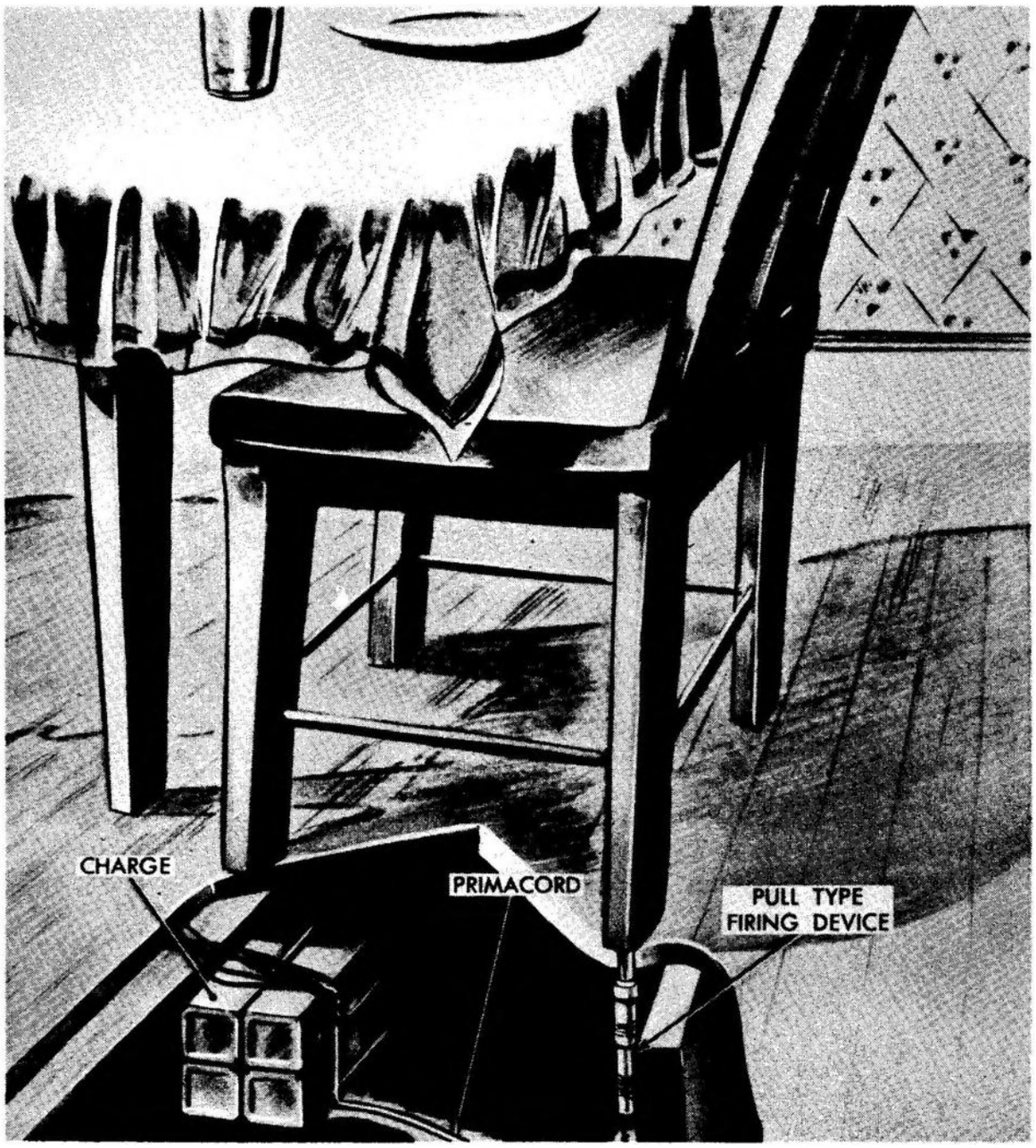


Figure 1. Chair leg conceals boobytrap.

before he has time to recognize the presence of danger. There is no defense against such devices except the training a soldier receives to maintain constant alertness for those marks, signs, and clues which disclose the existence of such traps.

b. Boobytraps have killed many soldiers during recent wars. Most of these casualties would have been avoided had proper attentiveness and caution been exercised. As the name indicates, these devices are designed to catch the "booby," the unwary or careless person who has not attained proper respect for battlefield hazards and enemy cunning. There is no substitute for alertness, caution, and a suspicious attitude when traveling, on foot or in a vehicle, through territory previously occupied by an enemy (fig. 2).

13. Boobytrap Hazards

a. All military explosives are dangerous and must be handled with proper care. Their great danger results from their sensitiveness to shock, heat, flame, or friction. Instability may cause chemical changes during long periods of storage that make them even more susceptible to accidental detonation. Exposure to climatic changes may cause explosives in a boobytrap to become extremely sensitive. All personnel handling boobytraps must recognize that their own safety, as well as the safety of others, depends upon the intelligence and care exercised by themselves in handling explosives.

b. Nervousness encountered when first assigned to duties involving explosives will disappear with increased knowledge and competence. Experience with explosives, however, may develop carelessness caused by familiarity. On the other hand, while the completely uninformed may have the intelligence to be conscious of dangers, a man with just a little knowledge may be made too bold for his own safety. Men who are habitually in a hurry or careless should never be assigned to duties involving the handling of explosives (fig. 3).

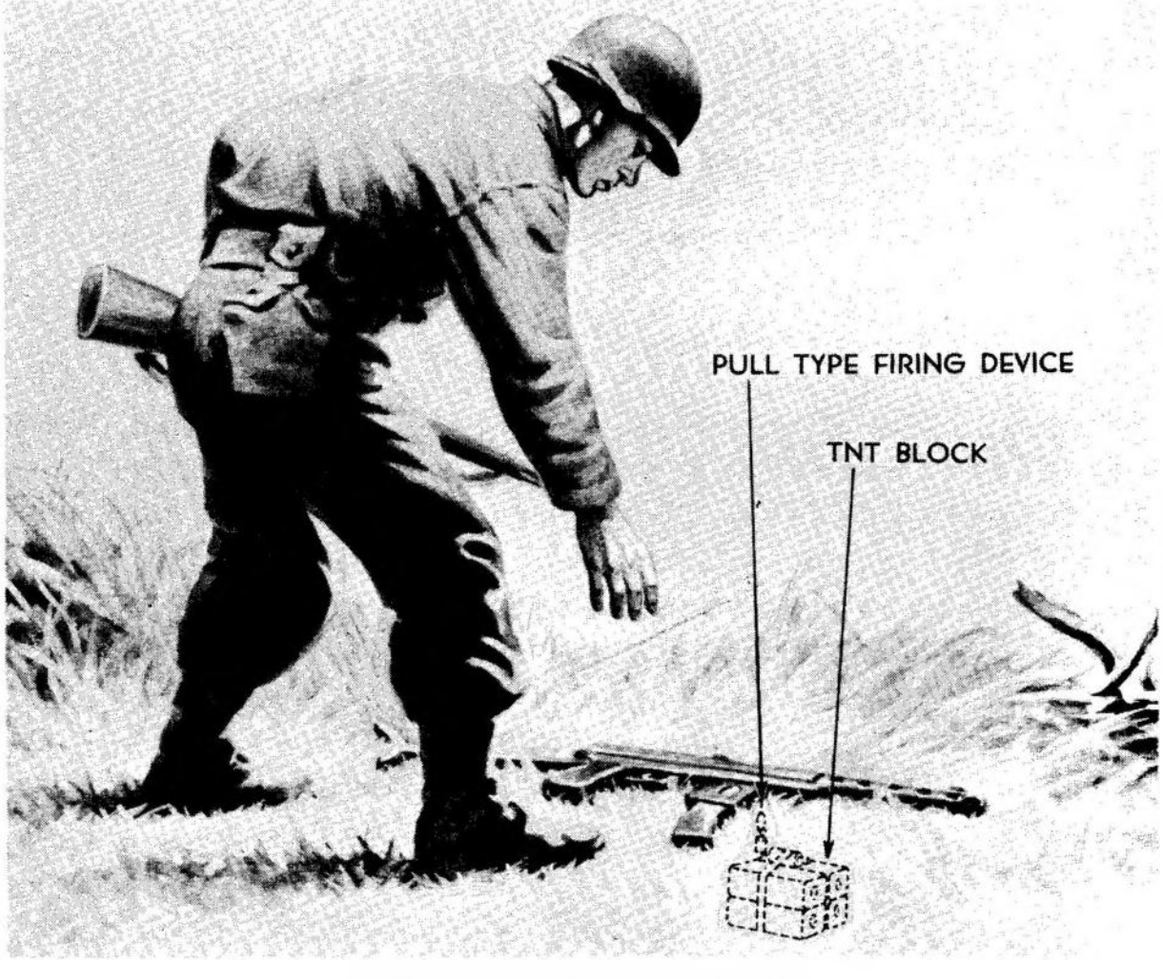


Figure 2. His last mistake.

Figure 3. Doomed exploration.

c. Boobytraps improvised in the field are made from a number of components, many of which will contain explosives. These items are manufactured, packed, and shipped in safe condition for reasonable handling operations. Safety devices, usually a component part, are easily rendered ineffective by unwitting action. Knowledge of these components, their function and the manner in which they become armed, is necessary before an individual may safely be assigned to duties involving assembly or disassembly of boobytrap materials.

d. Every boobytrap, whether installed by friendly or enemy personnel, involves a trick device to initiate its action. These triggering mechanisms, provided with maximum concealment, are placed where they are most likely to be actuated by some normal movement of a passing soldier. Trip-wires are frequently used, and many soldiers have met death in picking up what appeared to be a harmless pipe, pen, flashlight, or similar item (fig. 4).

e. Information contained in this manual is inadequate to make the reader an expert. Training and experience are necessary to cope with complicated boobytraps either in their *disarming* or *neutralization.* Whenever a strange contraption is detected that may possibly be a dangerous trap, a prudent man, if it isn't his business, *will leave it alone,* mark the spot with a conspicuous

sign, and report its location to proper authority. A careless, cocky, or inquisitive soldier, on the other hand, will probably be blown to bits (fig. 5).

Section V. SAFETY

14. Operating Conditions

a. Always be on the alert for boobytraps when traversing ground previously occupied by an enemy. Keep your eyes open, your senses alert, and treat with suspicion any object, natural or otherwise, that appears to be out of place or in artificial surroundings. While haste is essential, the path ahead must be kept under careful observation for boobytraps.

b. Safety also is a major consideration, either when installing boobytraps, or when they are being disarmed or neutralized. Plan the methods to be used in such manner as to create minimum practicable hazards to life and property.

c. When boobytraps are being installed, treat the immediate vicinity of an installation as restricted and prohibit the presence of unauthorized personnel. Boobytraps may be installed by teams, but normally will be armed by one man. Teams must operate at safe distances from each other (fig. 6).

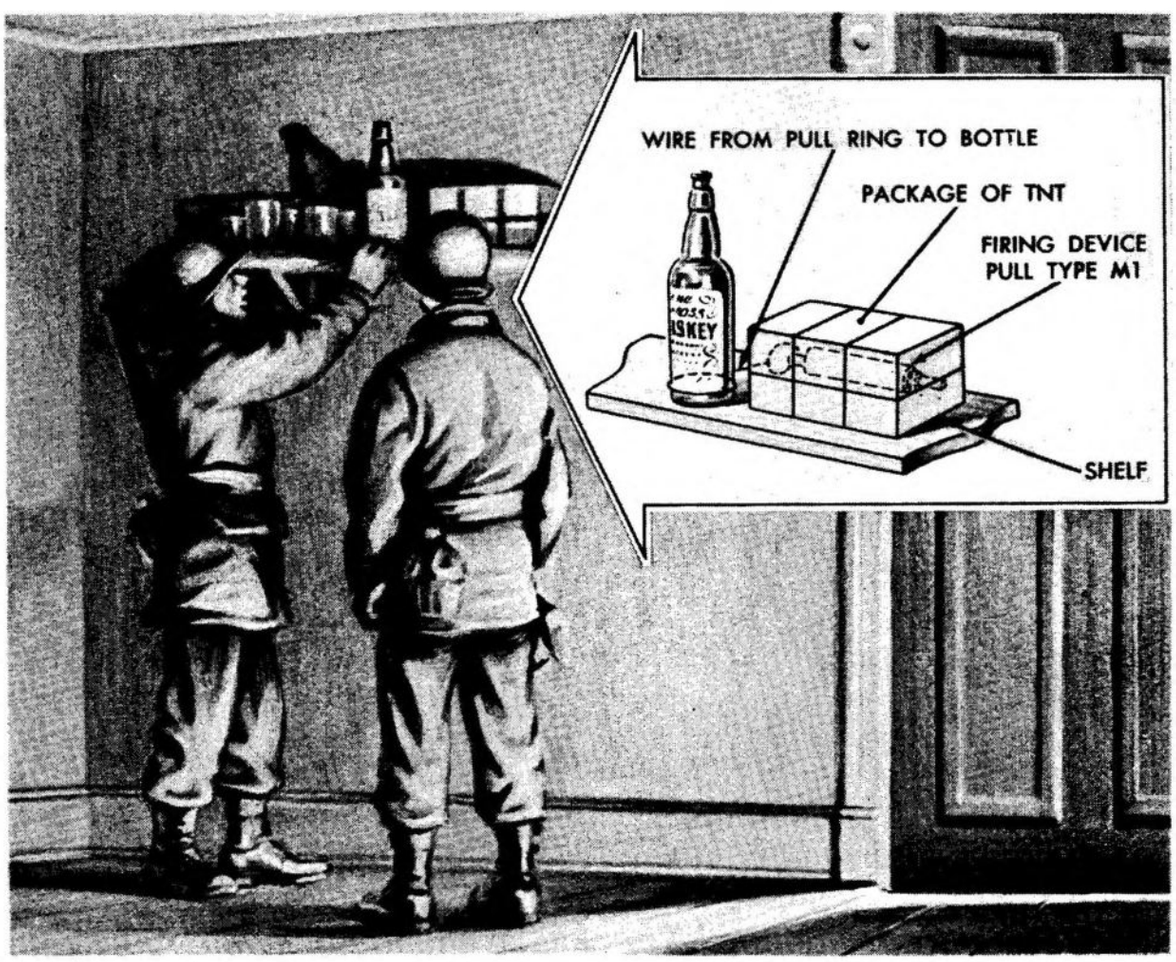


Figure 4. Look before you lift.

Figure 5. Don't be curious.

d. All mines are installed in a minefield according to pattern. A percentage of these mines are then selected to be boobytrapped. When a cluster contains a mine to be boobytrapped, the cluster is left unarmed, usually until all other clusters have been armed, or until all clusters within 50 paces are armed and personnel are at a safe distance away.

15. Precautions

a. In any location or during any operation involving explosives, ammunition, severe fire hazards, or toxic materials, a cardinal principle to be observed is to limit exposure to a minimum number of personnel, for a minimum time, to a minimum amount of hazardous material consistent with safe and efficient operations. Never allow one person alone to carry on an operation of a hazardous nature if he may become injured through lack of assistance. Information on safety precautions is contained in

TM 9–1900, FM 5–25, and the manuals covering specific items of ammunition.

b. Items of ammunition that are designed for disassembly will always come apart easily if they have been properly assembled. Never use force in handling explosives. It is expressly forbidden to tamper with, or attempt to modify live ammunition or any of its components, unless an operator has been properly trained, suitable equipment is available, and complete instructions describing each operation are provided.

Figure 6. Work at safe distances.

CHAPTER 3

PRINCIPLES OF OPERATION

16. Explosive Train

a. An explosive train is an arrangement of a series of explosions beginning with a small quantity of highly sensitive explosive, and terminating in a relatively large quantity of comparatively insensitive explosive. While required in activating large quantities of either high or low explosives, only those explosive trains pertaining to high explosives are of interest in the study of boobytraps.

b. Successive steps in an explosive train as applied to the elements of a mine are shown in figure 7. Action of a high-explosive train within an artillery shell is shown in figure 8.

c. Use of a delaying element is sometimes desirable in an explosive train. This may be obtained by using a chemical delay in the firing device, by introducing a delaying element such as a delay type detonator in the explosive train, or by using a timing device to trip the firing device, as in the case of the delayed-action mine shown in figure 9.

17. Boobytrap Construction

a. The components of a boobytrap must be joined together in a definite and precise arrangement to develop a continuous chain of action until complete detonation of a main explosive charge occurs.

b. Basically, a boobytrap consists of a firing device, a detonator, and a main charge. The firing device may be attached directly to the detonator, or connected to it by means of a detonating cord, time fuse, or electric wires, depending on the type of device. The main charge may be bulk explosive, or it may be a mine, grenade, artillery or mortar shell, or other standard charge.

c. Initiating action, usually by personnel disturbing an apparently harmless object, acts upon the firing device which sets off the detonator. The detonator detonates the main charge. The main charge provides the striking power of the boobytrap.

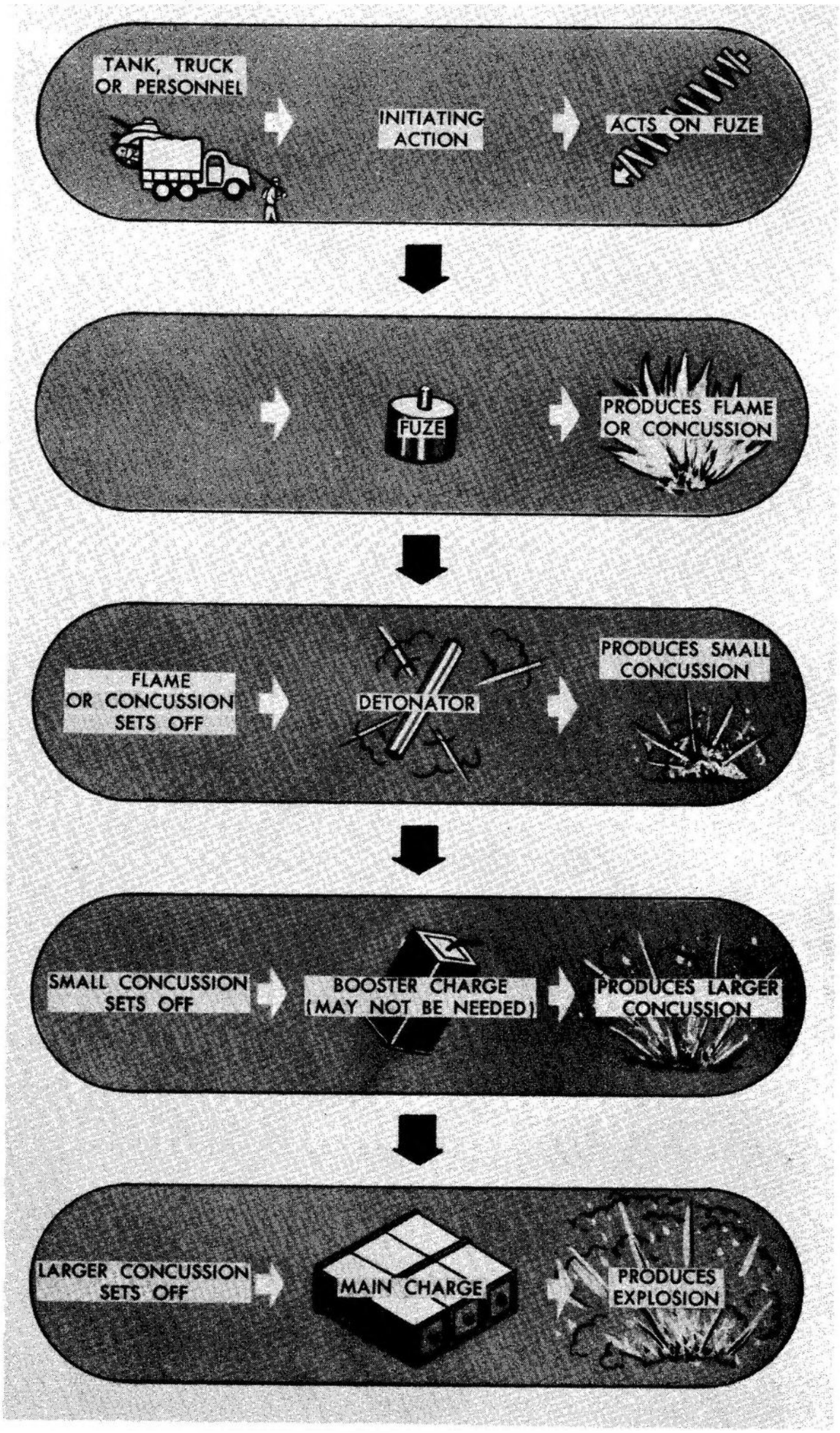


Figure 7. Explosive train of a mine.

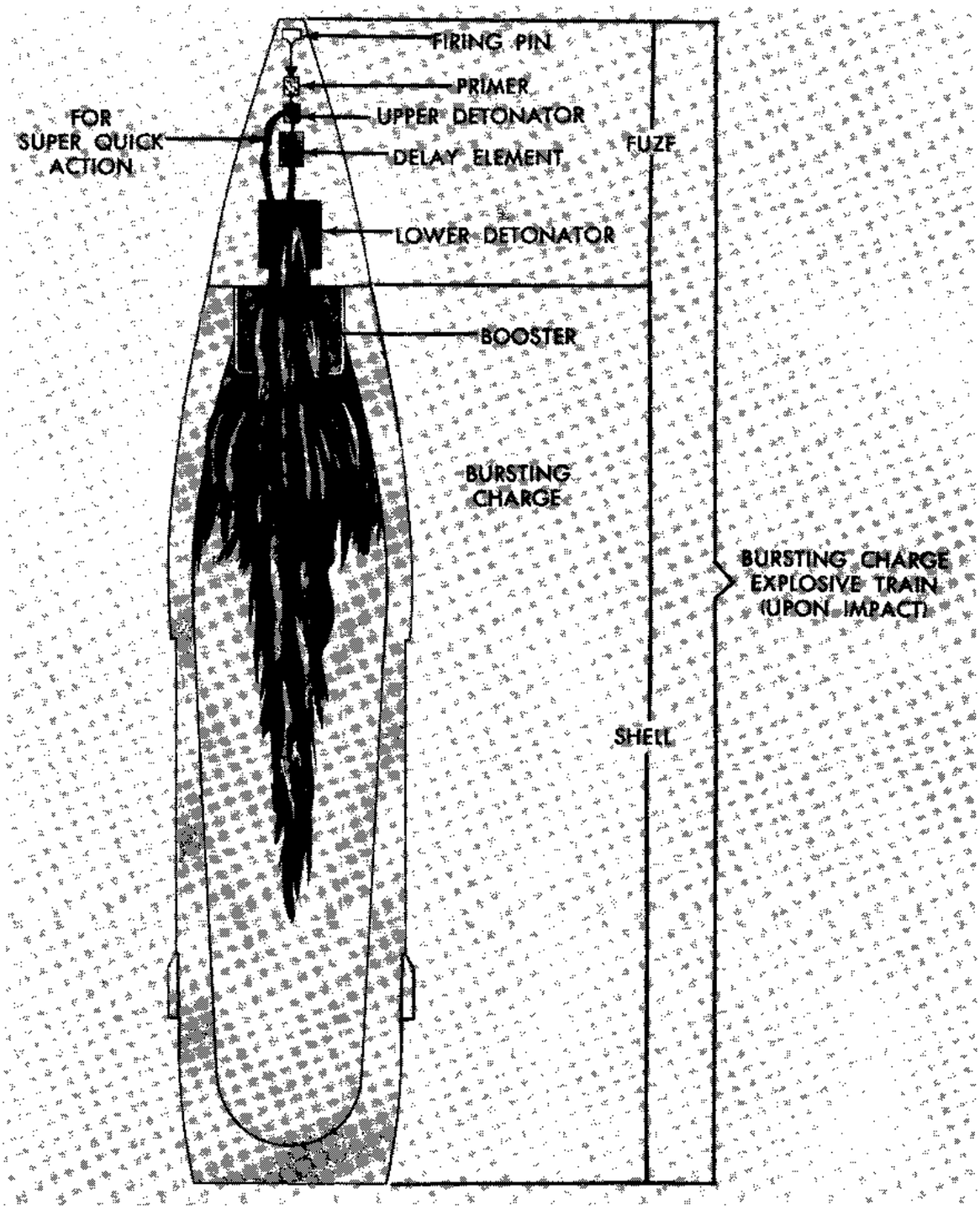


Figure 8. High-explosive train in artillery shell.

18. High Explosives

a. Consisting of either a pure compound or an intimate mixture of several ingredients, high explosives are used extensively in the design of boobytraps. Details of the explosive and physical characteristics of many explosives used in ammunition may be found in TM 9–1900.

b. Persons assigned to the making of boobytraps need not be concerned with the individual explosive characteristics of any base charge used in a standard round of ammunition. Highly sensitive explosives such as mercury fulminate and lead azide

are used only in such items as primers, detonators, and blasting caps. Explosive fillers in ammunition are comparable to TNT or pentolite in their explosive reaction. TNT in the form of blocks is also supplied for demolition purposes in ½- and 1-pound sizes (fig. 10). These also are used as base charges in the making of boobytraps.

c. The explosive core of detonating cord (primacord), frequently employed in making boobytraps (fig. 11), is made from PETN, while tetrytol and composition C are also used in making demolition blocks. While the explosive characteristics of these explosives do not vary greatly from TNT, composition C has the added characteristic of being plastic. A block made from this explosive can be molded by hand (fig. 12).

19. Initiating Action

a. Initiating action acts upon a firing device which starts an explosive action in a boobytrap's firing chain. Mechanical devices are available which permit many variations in the act that causes a firing device to start functioning.

b. Direct pressure (fig. 13) is the most commonly used method. Mechanisms using direct pressure are designed to be operated by

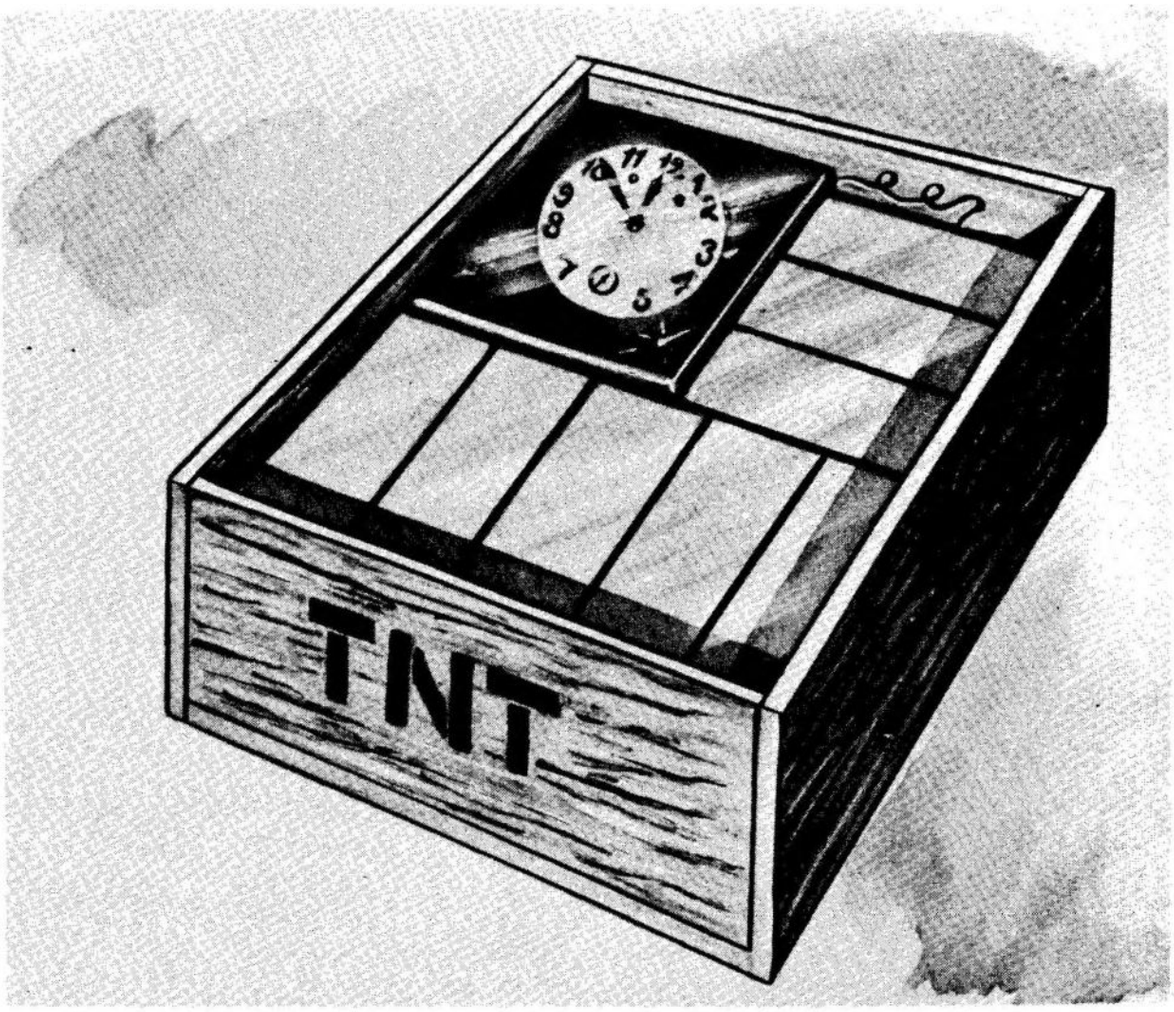


Figure 9. Delayed-action mine. Clock mechanism trips firing device.

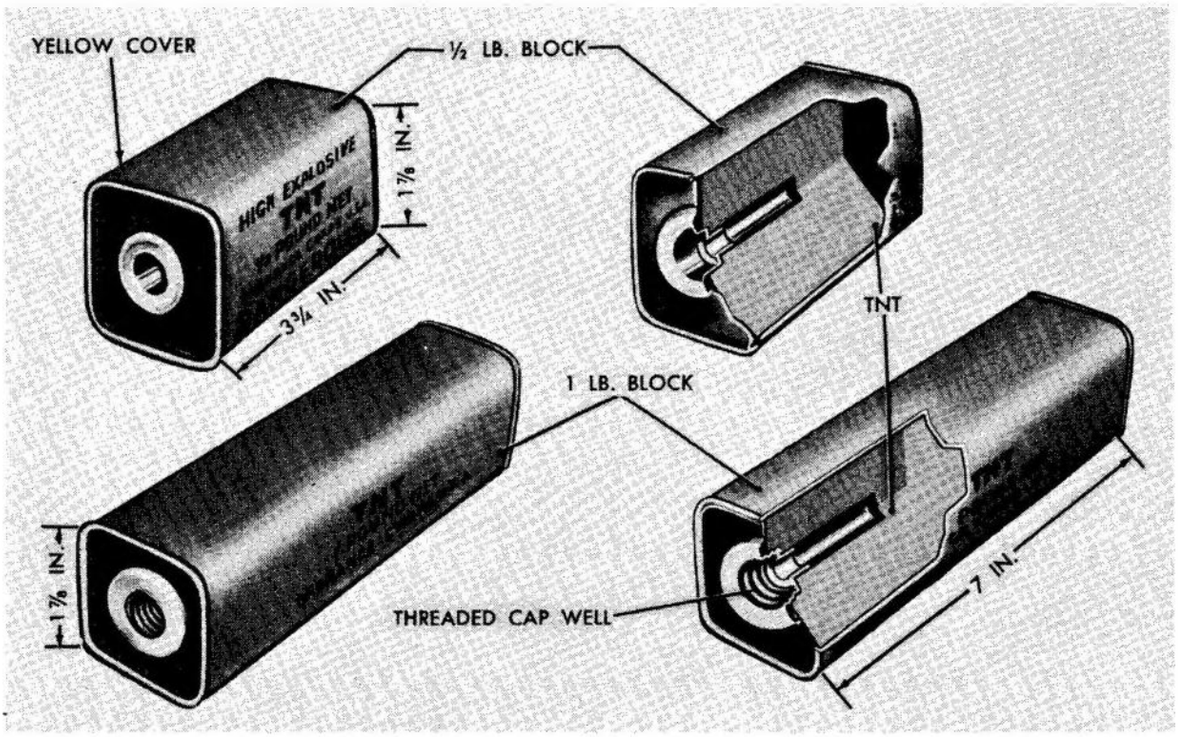


Figure 10. Blocks of TNT.

pressure of a foot, wheel, or track. Camouflage employed to conceal such devices reduces danger of detection.

c. Pull is another method used to imitate action in a booby-trap. Pull (tension) may result from the movement of some

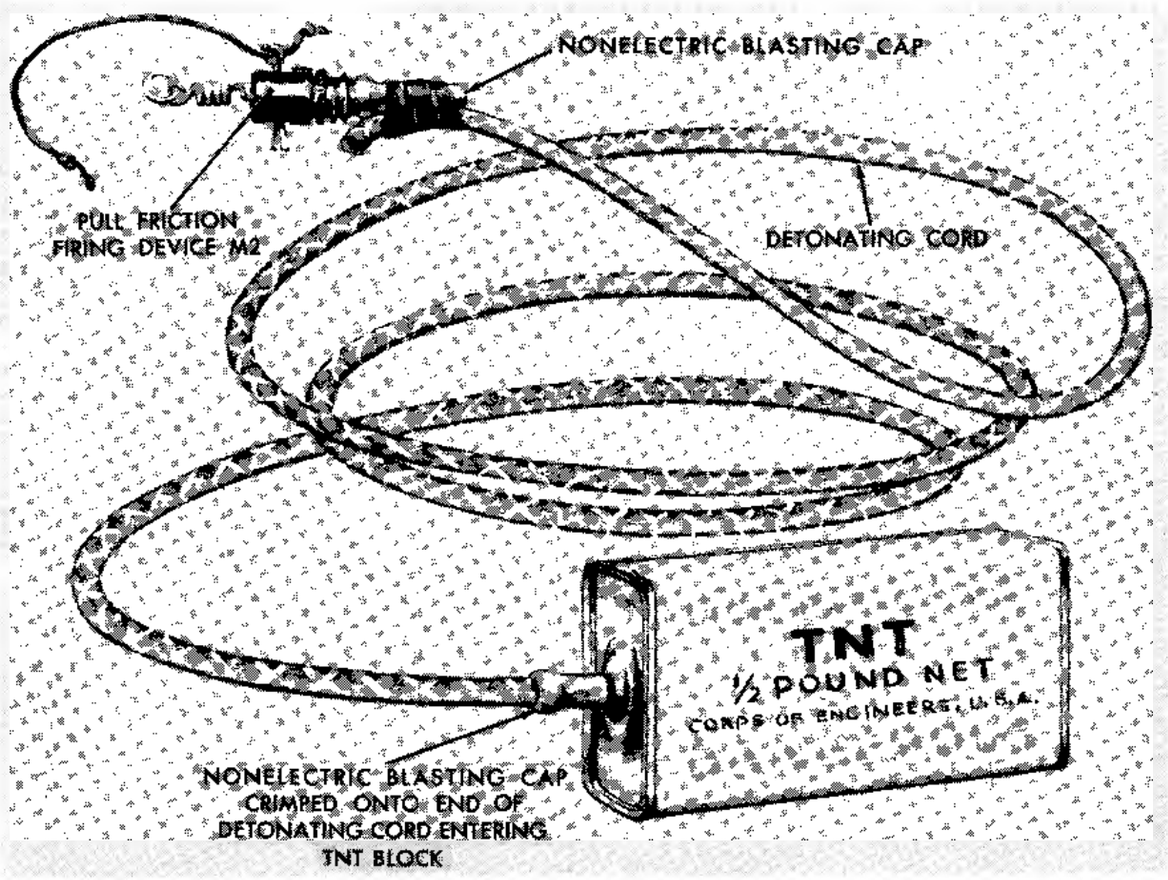

NONELECTRIC BLASTING CAP
PULL FRICTION FIRING DEVICE M2
DETONATING CORD
TNT
½ POUND NET
CORPS OF ENGINEERS, U. S. A.
NONELECTRIC BLASTING CAP CRIMPED ONTO END OF DETONATING CORD ENTERING TNT BLOCK

Figure 11. Explosive train for demolition blocks.

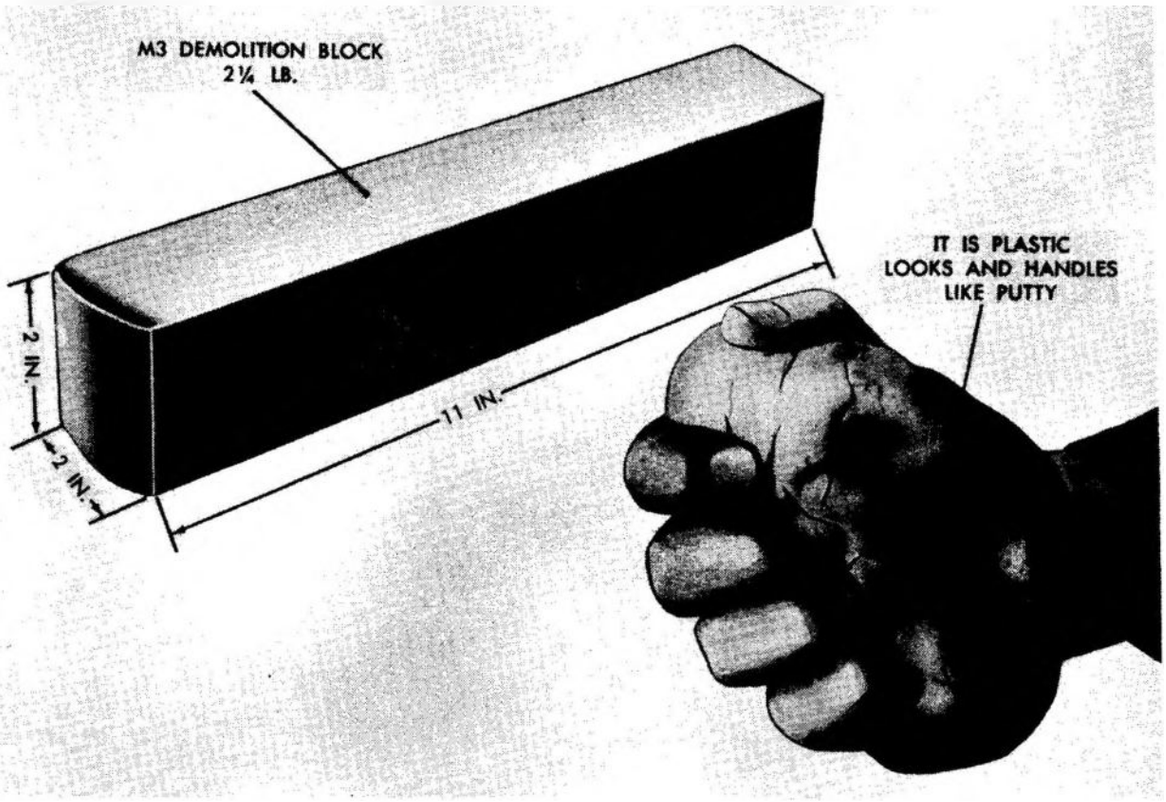


Figure 12. M3 demolition block.

concealed object attached to the firing device of a boobytrap by a connection such as a thin wire (fig. 14).

d. Release of pressure is an effective way to initiate action under many conditions. There is no appreciable telltale feeling imparted in a lifting action where the item being raised is not too small. This is a particularly desirable means for employment where souvenirs are used as bait (fig. 15). Grenades, with safety pins removed, make excellent boobytraps where pressure release mechanisms are employed. Cunning deception is necessary to avoid alarm during delay intervals inherent in grenades unless an instantaneous detonator has replaced the standard grenade fuze.

e. Release of tension is another means employed to initiate boobytrap action (fig. 16). This method is advantageous for use where boobytraps are located among other wires such as found in barbed wire entanglements or among loose communication wires. Any place where an enemy may be prompted to use wire-cutters is an appropriate site for using a release of tension device. A variation of this method is found in a pull-release device where pull on its taut trip-wire as well as release of the wire will initiate firing action within the device.

20. Operation of Fuzes and Firing Devices

Initiating action causes the device to start functioning. The device may work in any one of several different ways to cause

ignition. Different methods used in various firing devices provide necessary variety for boobytraps.

a. Electrical energy may be used (fig. 17). Initiating action closes an electric circuit and fires an electric cap. The current may be provided by a battery enclosed within the device.

b. Percussion is widely used (fig. 18). This method employs a compressed spring which, upon release, transmits its stored-up energy through a striker or firing pin to a primer. This same sort of mechanism is used in a rifle where a sear releases the

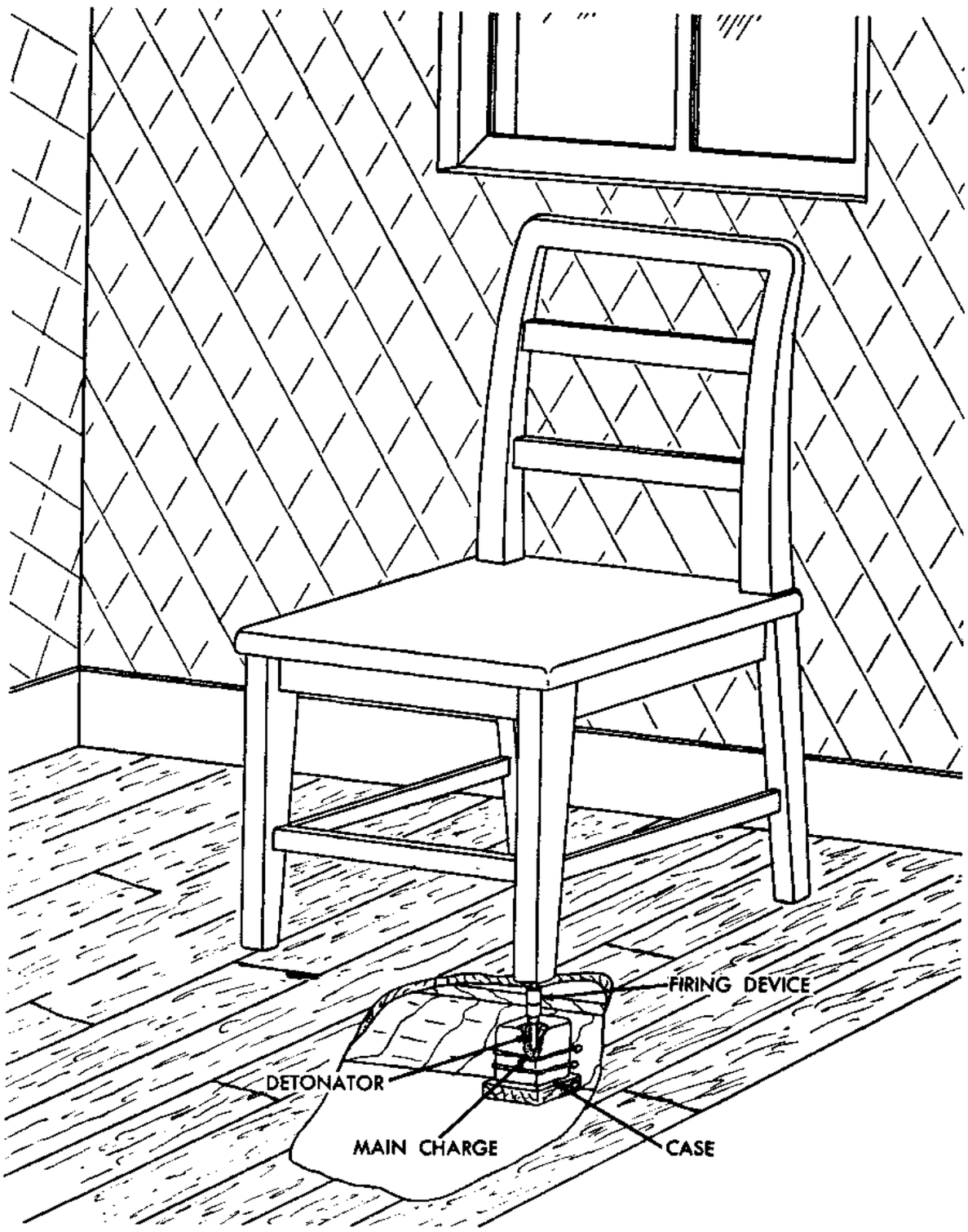


Figure 13. Pressure initiates action.

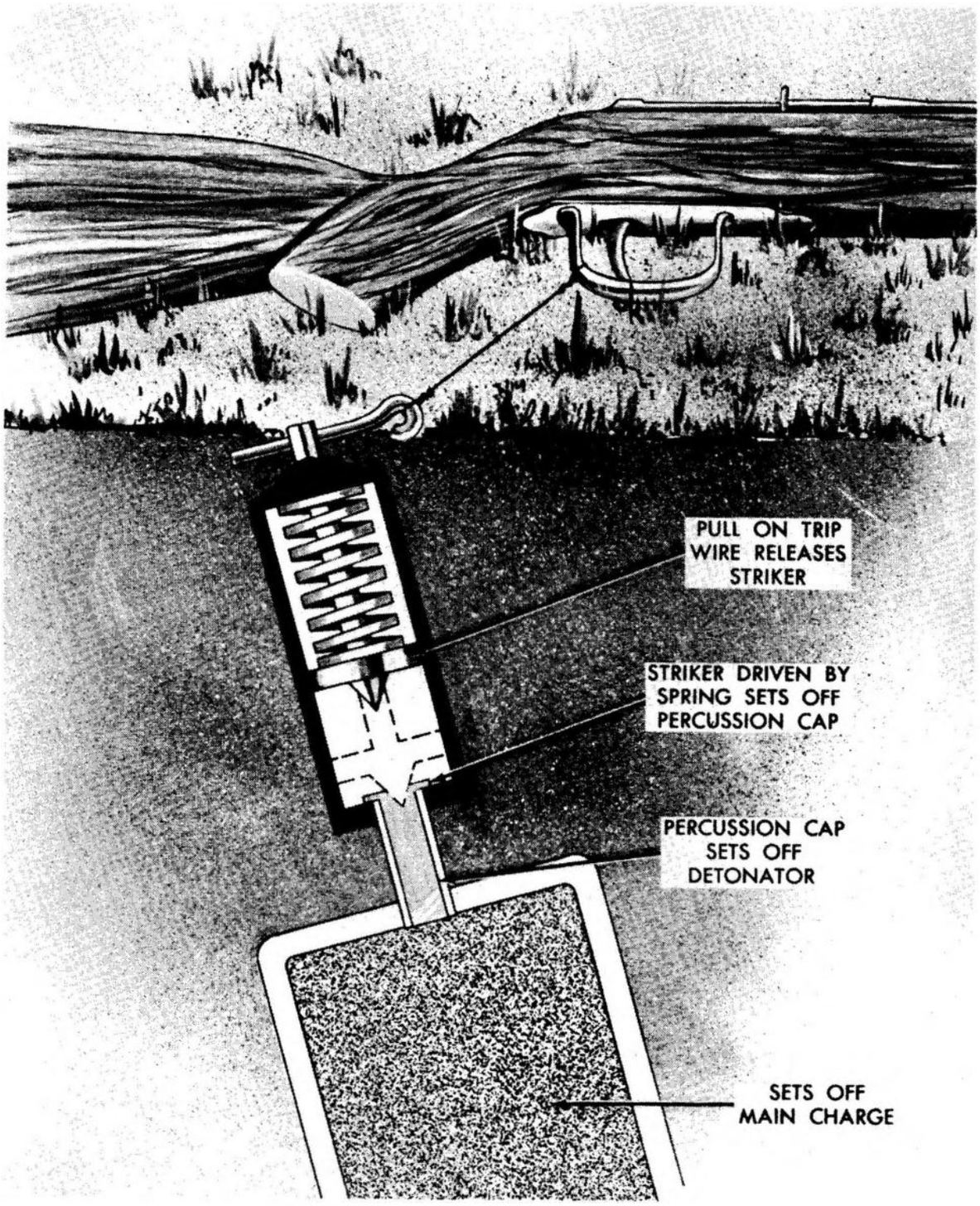

PULL ON TRIP WIRE RELEASES STRIKER
STRIKER DRIVEN BY SPRING SETS OFF PERCUSSION CAP
PERCUSSION CAP SETS OFF DETONATOR
SETS OFF MAIN CHARGE

Figure 14. Pull initiates action.

firing pin which, under pressure of a compressed spring, jumps forward and strikes a primer in base of cartridge.

c. Friction may be employed as illustrated in figure 19. Pull on a tripping device causes a coated wire or friction cord to be stripped through a flash or friction compound. This ignites the compound which in turn fires either a detonator or blasting cap, or it may ignite an attached fuse. Force of several pounds is required to cause ignition, a characteristic that must be considered when this type of fuse is used in a boobytrap. A delay element may be placed between the friction compound and detonator.

d. Chemical action may also be used within a firing device (fig. 20). Chemicals are employed either to damage and release firing components held in safe positions by some device such as restraining wire, or to initiate ignition in another chemical compound. Delays are introduced whenever time is required for chemical action.

21. Blasting Caps

a. Electric blasting caps (fig. 21) may be employed in making boobytraps when using demolition charges for which such caps are suitable. Use of electric wires makes firing of a charge possible when a base charge is located at a considerable distance

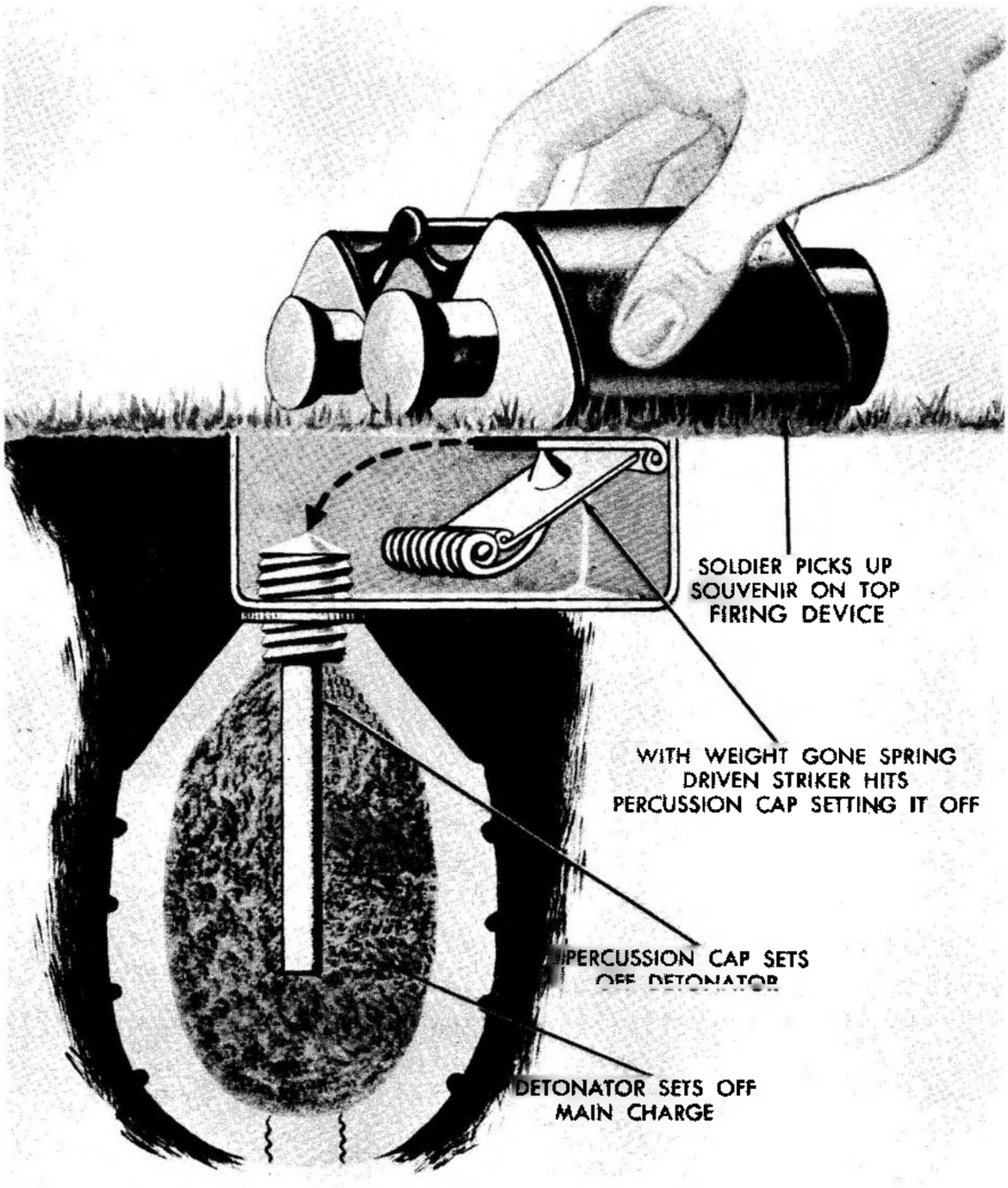

SOLDIER PICKS UP SOUVENIR ON TOP FIRING DEVICE
WITH WEIGHT GONE SPRING DRIVEN STRIKER HITS PERCUSSION CAP SETTING IT OFF
PERCUSSION CAP SETS
DETONATOR SETS OFF MAIN CHARGE

Figure 15. Pressure-release initiates action.

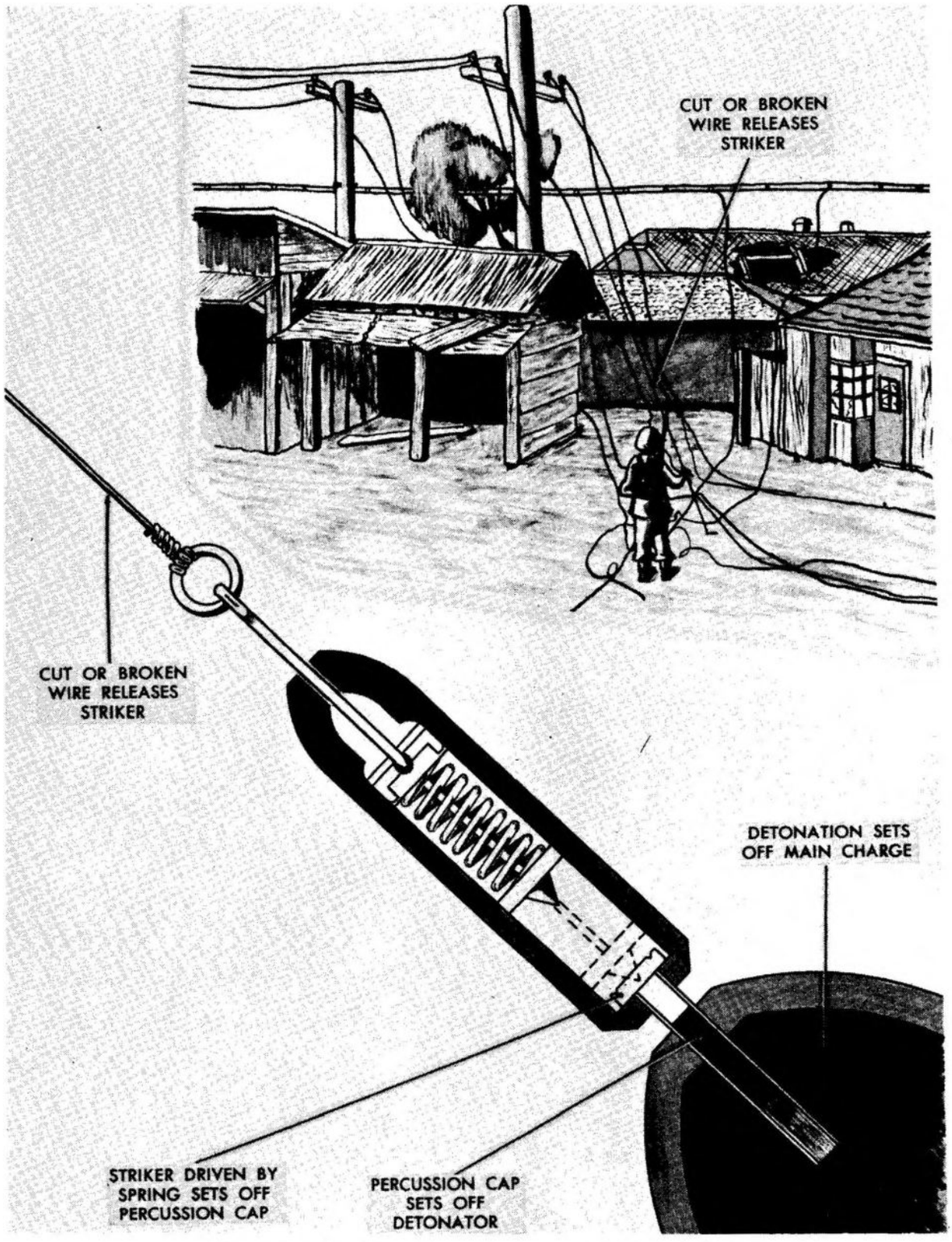

CUT OR BROKEN WIRE RELEASES STRIKER
CUT OR BROKEN WIRE RELEASES STRIKER
DETONATION SETS OFF MAIN CHARGE
STRIKER DRIVEN BY SPRING SETS OFF PERCUSSION CAP
PERCUSSION CAP SETS OFF DETONATOR

Figure 16. Tension-release initiates action.

from its initiating device. Electrical energy must be supplied through a firing device of a type similar to those shown in figure 17.

b. Nonelectric blasting caps (fig. 22) are used extensively with firing devices. They are attached by crimping to the long nipple on a standard base. When so used, firing of the firing device detonates the explosive charge in the nonelectric blasting cap which action detonates the main explosive charge. The

explosive end of the cap may be inserted directly into the main explosive charge or it may transmit the detonation through a detonating cord, one end of which is attached to the cap and the other to the main explosive charge. Detonating cord makes possible the simultaneous detonation of many explosive charges at varying distances from a firing device. Blasting caps and their uses are discussed in greater detail in FM 5–25.

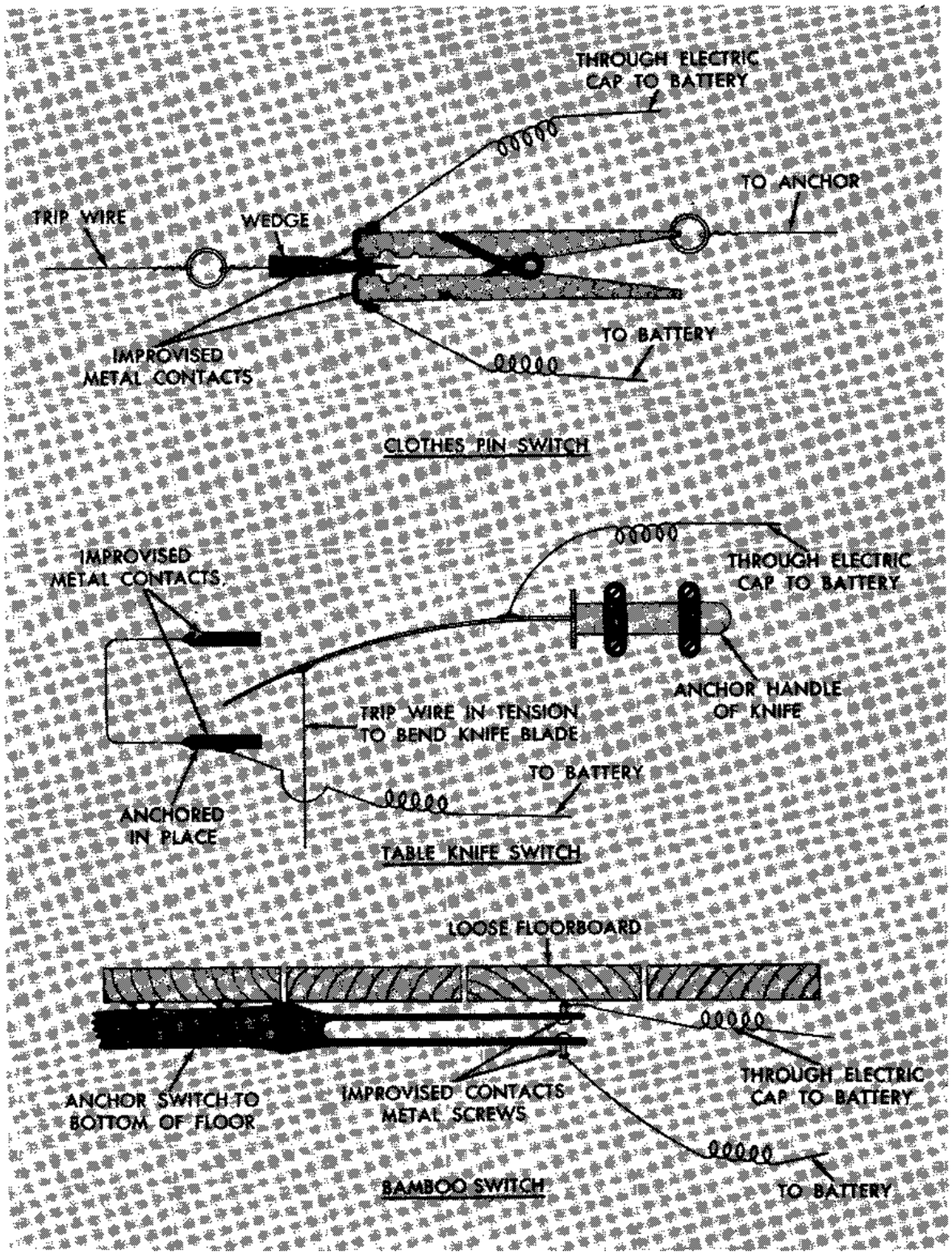


Figure 17. Ignition by electrical means.

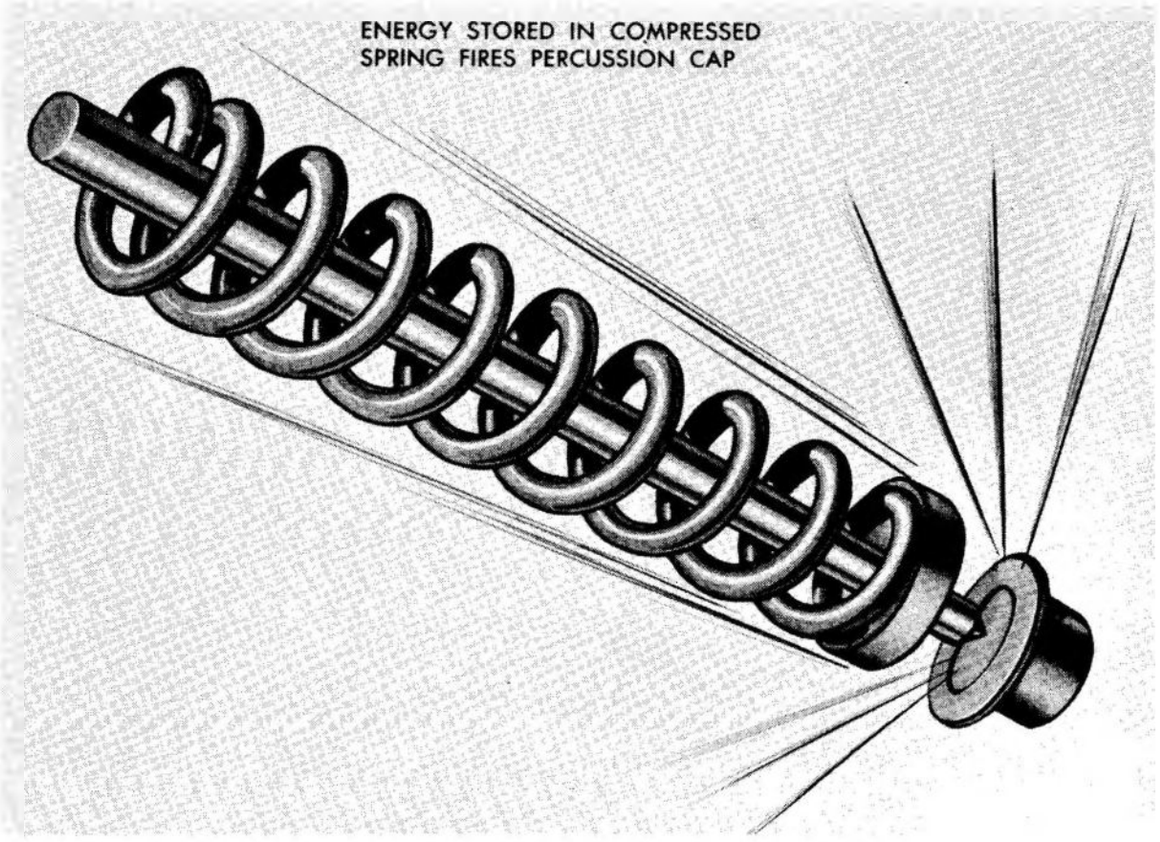


Figure 18. Ignition by percussion action.

22. Destructors

a. High-explosive elements, such as fuzes, used to detonate ammunition fired at distant targets are provided with safety and delay elements which prevent premature detonation. When ammunition such as bombs and shells is used with boobytraps, it is

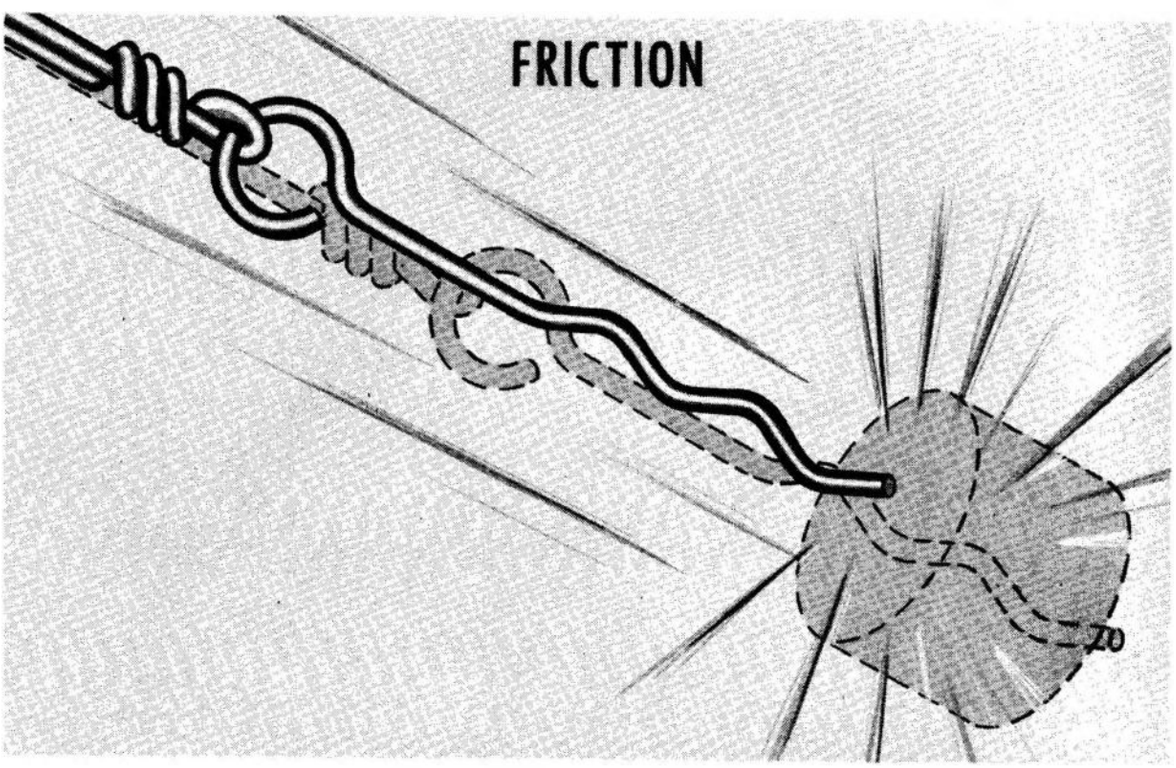


Figure 19. Ignition by friction

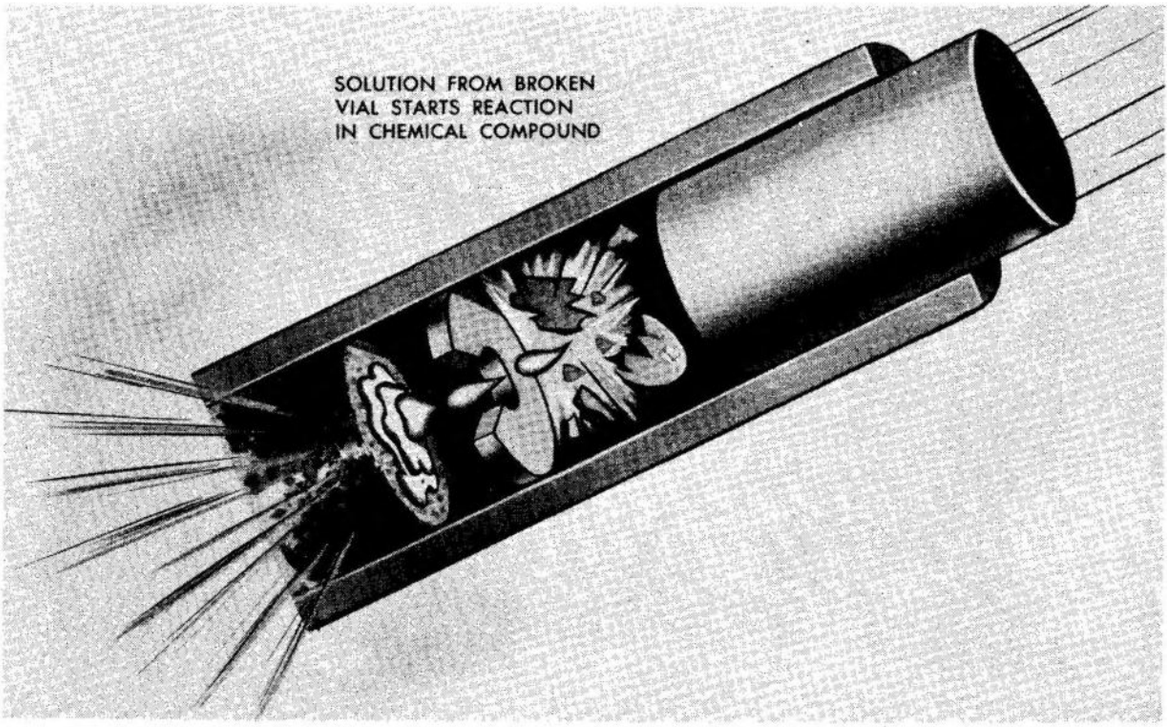


Figure 20. Ignition by chemical action.

necessary to replace standard service fuzes with detonators that can be activated instantaneously by firing devices. Called destructors, or activators, such devices are essentially detonator boosters, designed for insertion in a firing chain between firing device and main charge.

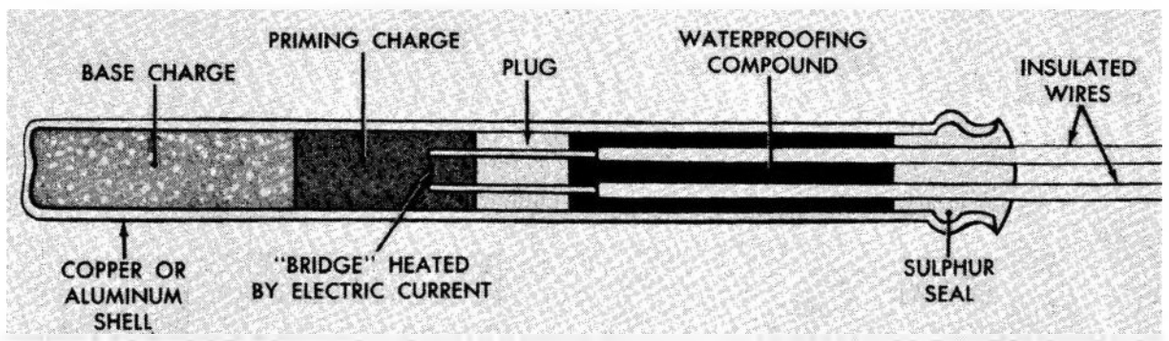


Figure 21. Electric blasting cap.

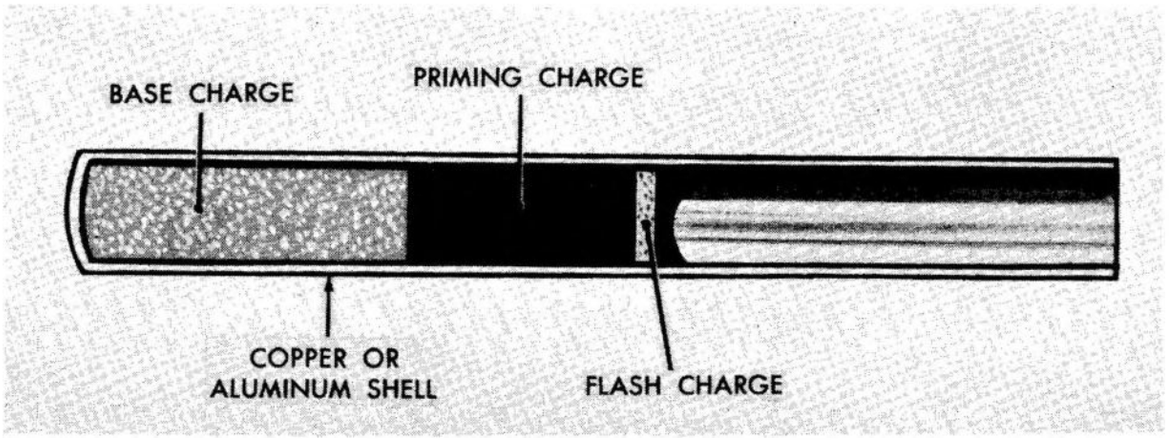


Figure 22. Nonelectric blasting cap.

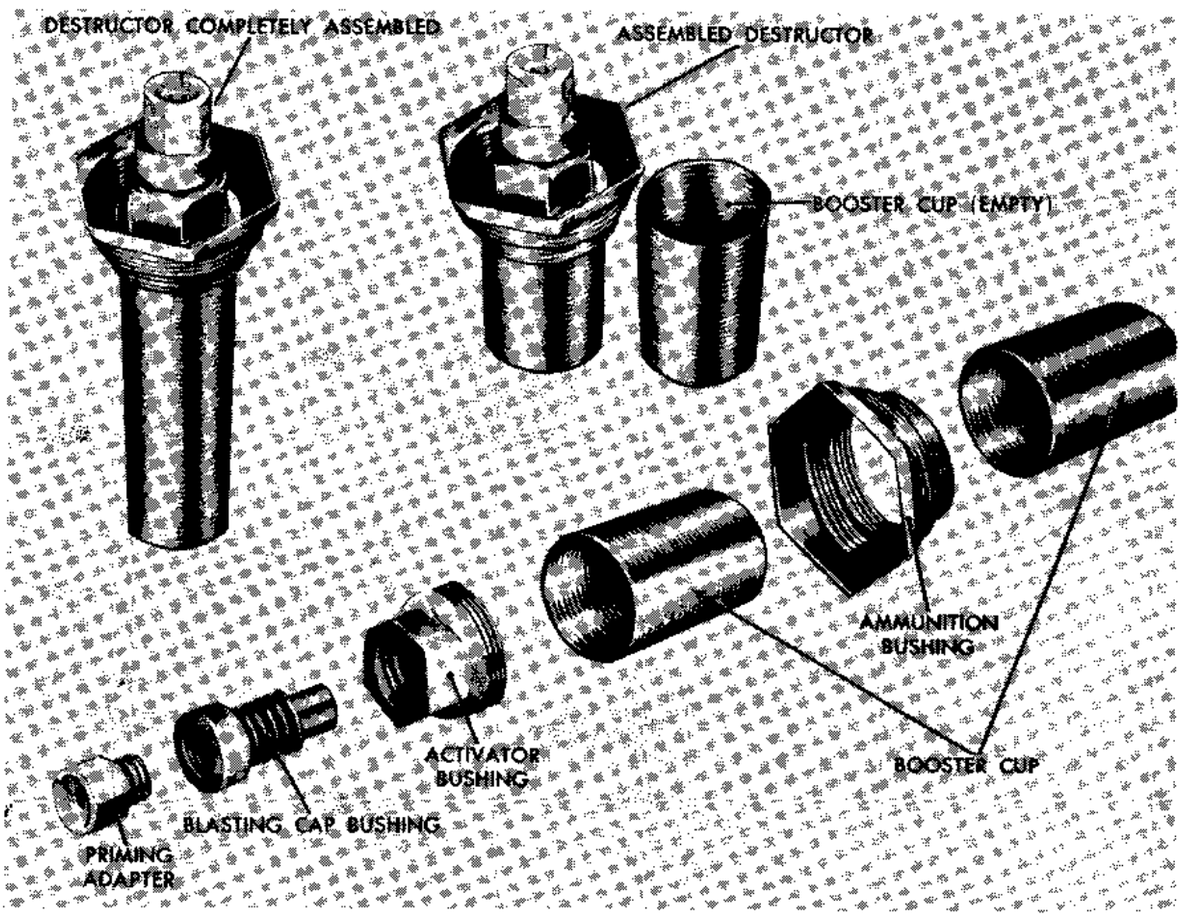


Figure 23. Destructor, HE, universal, M10.

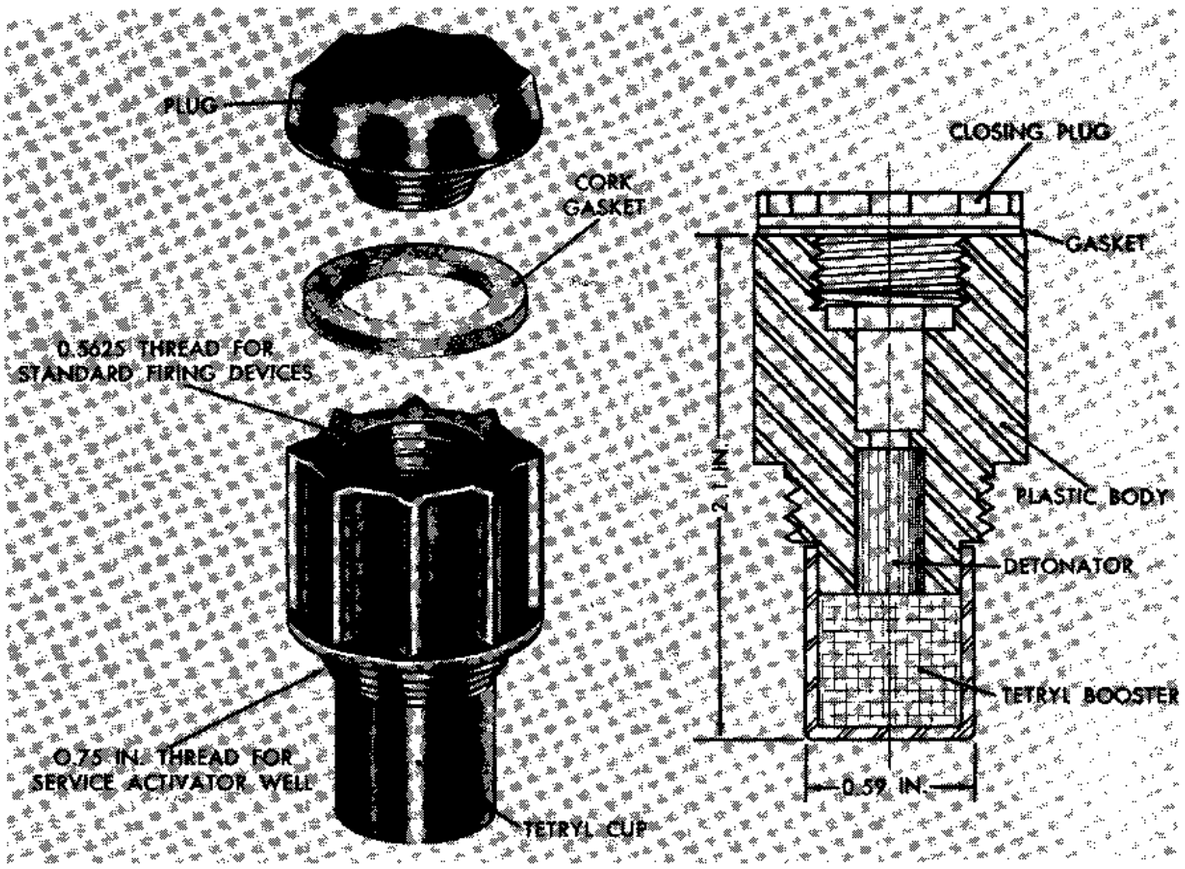


Figure 24. Activator, M1.

b. Destructor, HE, universal, MIO is a high-explosive adapter composed of five metal parts for utilization of standard firing devices and blasting caps in preparing loaded projectiles and bombs as improvised mines, boobytraps, demolition charges, and in the destruction of abandoned or deteriorated ammunition (fig. 23). As issued, it consists of a standard priming adapter, a blasting cap bushing, an activator bushing, an ammunition bushing for use when the opening in the ammunition is larger in diameter than 1.5 inches, and two booster caps containing tetryl pellets.

c. Activator M1 (figs. 24 and 25) is essentially a detonator booster. Used in conjunction with any one of several kinds of standard firing devices, activator M1 supplies an antitank mine with one or more secondary fuses useful for boobytrapping purposes. An activator performs the functions of an adapter between firing device and mine. Threads are provided at one end for insertion into a mine activator well and at the other end to

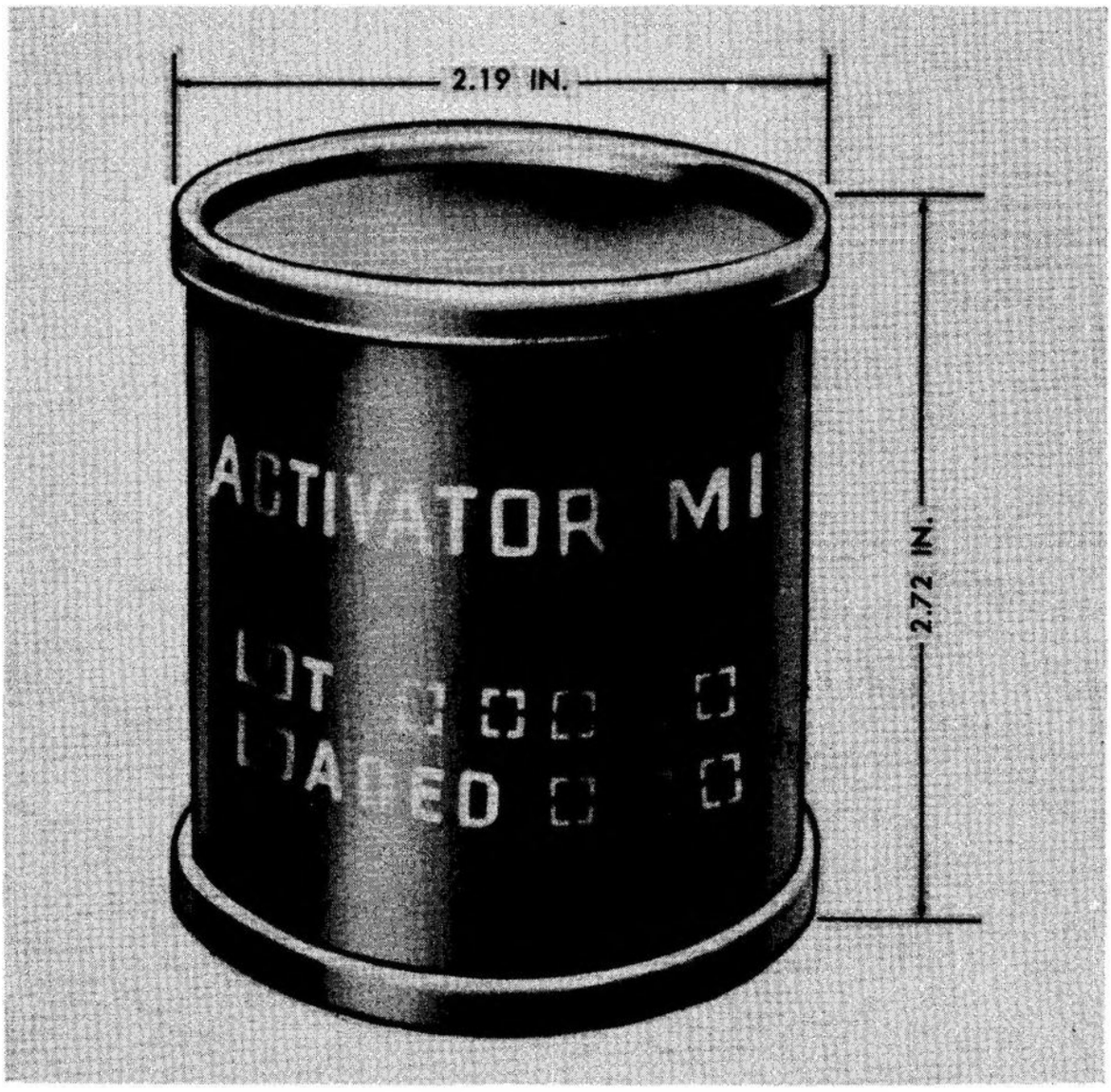


Figure 25. Metal container for activator M1.

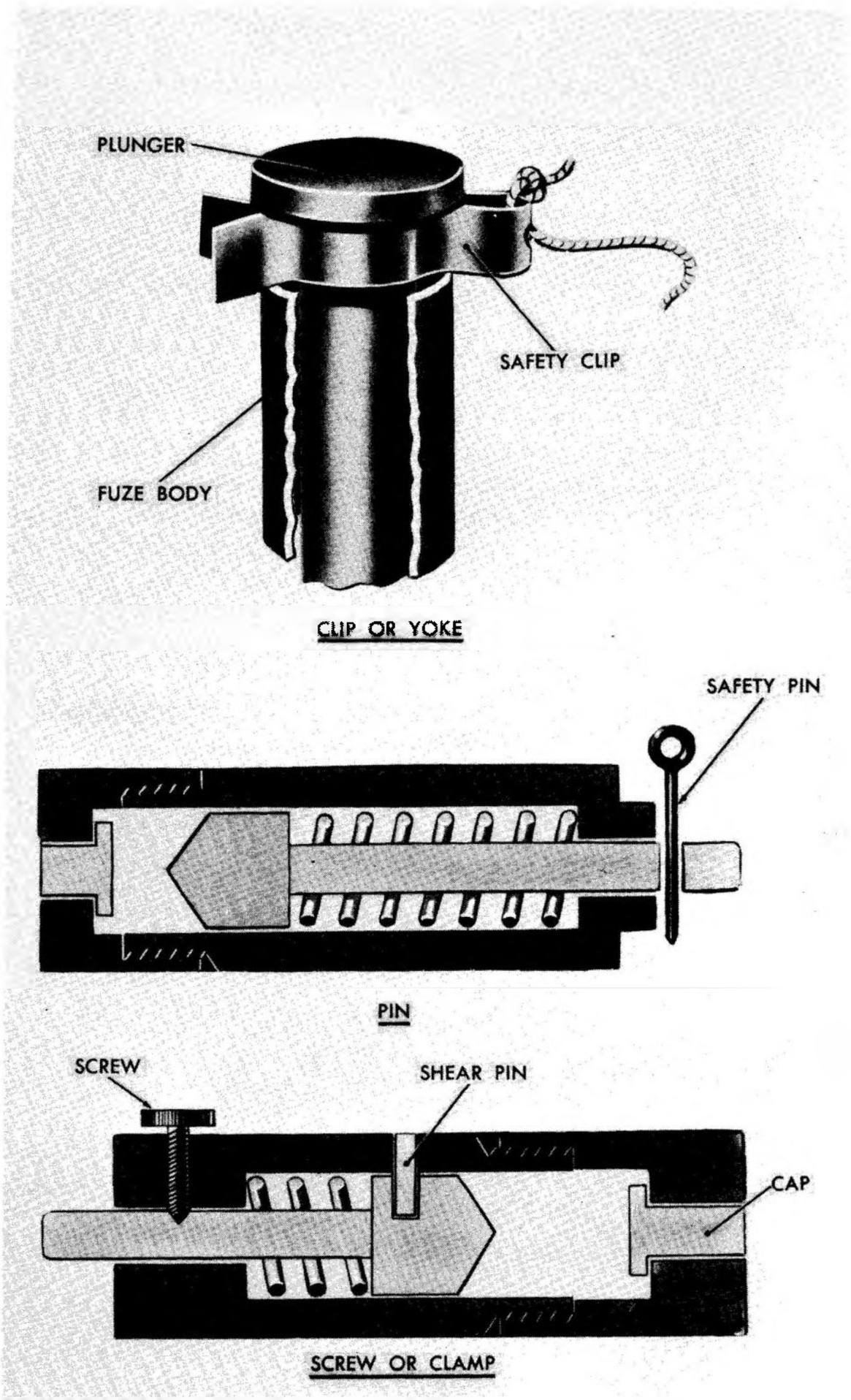


Figure 26. Types of safeties on different firing devices.

receive a primed coupling base of a standard firing device. Care must be observed in using this mechanism to avoid inclosing foreign matter such as dirt, cap-sealing compounds, or wax which may cause a misfire.

23. Safety Devices

a. Organic safeties (fig. 26) are built into practically all mines, fuzes and firing devices. Since safety devices are designed to nullify initiating actions, their removal from boobytrap components must be delayed until emplacement has been completed. Removal of safety devices, called *arming*, should be carried out with great care in order to avoid jars or disarrangement.

b. Care must also be exercised when it becomes necessary to replace safety devices (*disarming*). Before attempting to replace safety devices, make a careful examination of all components to determine whether any unusual or abnormal dangers exist. Force should never be necessary in replacing a safety device.

CHAPTER 4

BOOBYTRAP MATERIALS

24. Main Charges

a. Selection of a proper explosive for use as a main charge is determined by the principal target of a boobytrap. Use against personnel, a charge that depends upon blast effect alone for its lethal qualities will require from 2 to 8 pounds of TNT or equivalent explosive. Used against material, size of charge is comparable to that prescribed for demolitions, further information being available in FM 5–25, FM 5–34, and FM 5–35.

b. Detonation of projectiles, bombs, and grenades produces lethal fragments as well as blast. Demolition blocks and bulk high explosives will do the same when encased with stones, nails, bolts, nuts, metal scrap, and similar items. Smaller quantities of explosives are required when fragments are produced.

c. Main charges used in boobytraps need not always be explosive in nature. Incendiary chemicals, illuminating or smoke compositions, and simple man-traps form effective substitutes. Selection of proper charge is important for best results.

25. Demolition Materials

a. Explosive items designed for destroying specific targets are provided in demolition materials. Bangalore torpedoes are used for obstacles, shaped charges for fortifications, destructors for equipment, and demolition blocks for general material. Since items to be destroyed vary greatly in size, demolition materials are designed to be used singly or in a cluster. Many different arrangement methods are employed to get best results, and information of this kind is provided in FM 5–25.

b. Throughout this manual are many illustrations of boobytraps in which main charges are made from demolition explosives. Amount of explosive required is determined by the damage a boobytrap is intended to do. Resultant blast from as little as 2 pounds of properly detonated TNT will kill a nearby man; larger amounts will kill at greater distances. Multiple demolition block charges should be prepared in convenient packages for handling and installing. Blocks may be stacked together and bound with

tape or twine, or they may be wrapped in cloth or paper. Many boobytraps illustrated use multiple demolition block charges.

26. Firing Devices

a. There is a wide variety of triggering mechanisms available for use in constructing boobytraps. Called fuzes, igniters, switches, or firing devices, they serve as control mechanisms to hold detonations in check until proper signals are given.

b. This manual contains descriptions of firing devices issued to U.S. forces. Each of the basic principles of operation mentioned in paragraph 19 is covered. Anyone fully understanding the operation of these mechanisms should have no difficulty in identifying enemy designs, wherein similar principles of operation are employed.

c. All U.S. standard firing devices use a standard coupling base to facilitate ease of assembly and wide variety in the choice of a base charge. Many firing devices are constructed to permit re-use in training.

d. Standard firing devices provide the following advantages over improvisation: established supply; speed of installation; dependability of mechanical functioning; resistance to weather; safety.

27. Standard Ammunition

a. Conveniently at hand in a combat zone is a supply of ammunition of many kinds that may be used as base charges in boobytraps. Minor modification is all that is required. Replacement of fuze with a suitable boobytrap mechanism is the normal change necessary. Use of mines, shells, and bombs provide large charges in convenient form and limit to a smaller load the amount of special equipment that must be carried by a boobytrapping team. Variety of available types is shown in TM 9–1901.

b. Ammunition is identified by means of painting and marking on items and containers. Color code of ammunition suitable for main charges is shown in table I. For information on marking of ammunition see TM 9–1900.

28. Supply

Ordnance Corps ammunition organizations are responsible for placing required quantities of ammunition at locations in a combat zone convenient to unit ammunition trains of combat forces. These supply points provide principal sources for boobytrap components required in combat.

29. Improvisation

Boobytrap teams should not depend upon unit supply stocks

as a source for all materials used. Generally there is an abundance of high-explosive items obtainable from ammunition stocks near an installation area. Reconnaissance, prior to planning an operation, will disclose such sources of supply. Rounds made unserviceable for standard use may be suitable for use as base charges in booby-traps. Use of captured enemy ammunition will be as directed and authorized by commanders of divisions, or by commanders of smaller units operating independently.

Table I. Ammunition color guide

GRENADE

Type	*Color*
High explosive	Olive drab, with yellow bands around top of body.
Training hand grenades (inert)....	Black.
Practice (simulated charge)	Blue.
Practice rifle grenades	Black, with white stencilling.
Chemical, (gas, toxic, persistent).	Gray, with 2 green bands and marking in green.
Chemical, (gas, toxic, non-persistent).	Gray, with 1 green band and marking in green.
Chemical (smoke)	Gray, with 1 yellow band and marking in yellow.
Chemical (incendiary)	Gray, with 1 purple band and marking in purple.

ARTILLERY AND MORTAR AMMUNITION

Type	*Color*
High explosive	Olive drab, with marking in yellow.
Chemical (smoke)	Gray, with 1 yellow band and marking in yellow.
Chemical (toxic, persistent)	Gray, with 2 green bands and marking in yellow.
Chemical (toxic, nonpersistent) ...	Gray, with 1 green band and marking in green.

MINES

Type	*Color*
High explosive	Olive drab, with yellow band.
Practice	Blue.
Dummy	Black.

CHAPTER 5

STANDARD AMMUNITION ITEMS

Section I. DEMOLITION MATERIALS

30. General

Demolition items of many kinds are issued to engineer, infantry, airborne, and similar units in accordance with established allowances. These usually are issued in sets which contain various explosives and the accessories needed to prime and fire them. Stocks generally are available to combat units and, because of their wide distribution throughout a combat zone, and their suitability for such use, demolition items are used liberally in boobytraps. More complete information about demolition materials is contained in FM 5–25.

a. Demolition Blocks. Used extensively as a main explosive charge for boobytraps, demolition blocks are issued in ½- and 1-pound sizes (fig. 10). Consisting of TNT and packaged in a cardboard contained with lacquered metal ends, each 1-pound block has a threaded cap well at one end to receive a priming adapter or standard firing device. One-half pound blocks do not have a threaded well. Similar demolition blocks weighing 2½ pounds and filled with tetrytol are also available and may be used in lieu of TNT blocks.

b. Packaging Blocks. While demolition blocks can be used singly, usual practice provides a minimum of four ½-pound blocks in a boobytrap charge when blast alone is the destroying force. When two or more blocks are used in a charge they should be tightly bound together to form a single package. A detonating cord may be used for this purpose.

c. M1 Chain Demolition Block. Another form of charge is found in the chain demolition block which contains eight of the 2½-pound tetrytol blocks. These eight blocks are cast onto a single line of detonating cord which passes lengthwise through them. Blocks are spaced 8 inches apart and the cord extends 2 feet beyond each end. A tetryl booster pellet is cast into both ends of all blocks in a chain. When less than eight blocks are

required, a chain is cut. Blocks may be laid in a line, wrapped around another high explosive, or stacked together. However laid, all blocks in a chain will detonate simultaneously.

d. Plastic Blocks. Plastic demolition blocks also are available which may be molded by hand to fit into inaccessible spaces (fig. 12). Weighing 2¼ pounds and filled with Composition C3, the M3 demolition block is wrapped in glazed paper and inclosed in a labeled olive-drab cardboard carton, perforated around the middle so that it can be readily broken open. The M5A1 demolition block, wrapped in a similar manner, consists of Composition C4 and, while its size remains the same as M3 (2 inches square by 11 inches long), it weighs 2½ pounds.

31. Bangalore Torpedo

The M1 bangalore torpedo (fig. 27) consists of a watertight section of steel tubing weighing 13 pounds, of which 9 pounds represent the weight of explosive. Filled with 80/20 amatol, with about 4 inches of TNT at each end, the tube is provided with threaded cap wells at both ends to accommodate standard firing devices. Bangalore torpedoes may be used singly or assembled as multiple-section torpedoes when used as base charges in boobytraps.

32. Detonating Cord

a. Description. Detonating cord (fig. 28) contains PETN in a yellow or yellow and black waterproof textile covering with a relatively rough, waxy finish. Insensitive to friction and ordinary shock, detonating cord (primacord) may be exploded by rifle fire when several strands are in contact with each other.

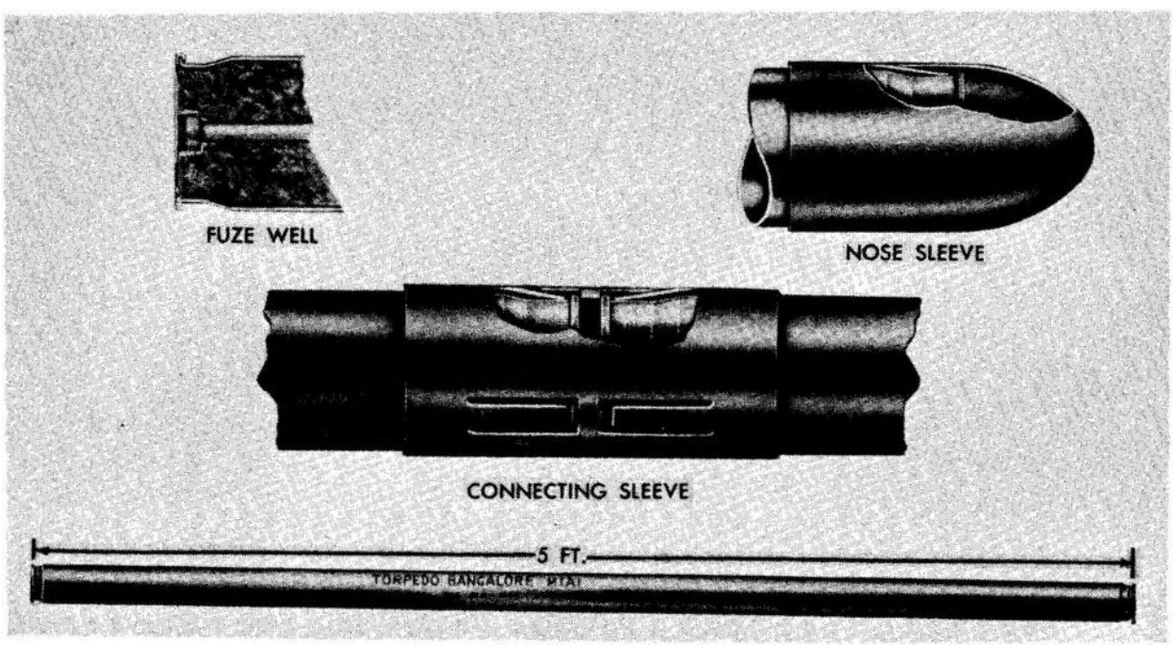


Figure 27. M1A1 bangalore torpedo.

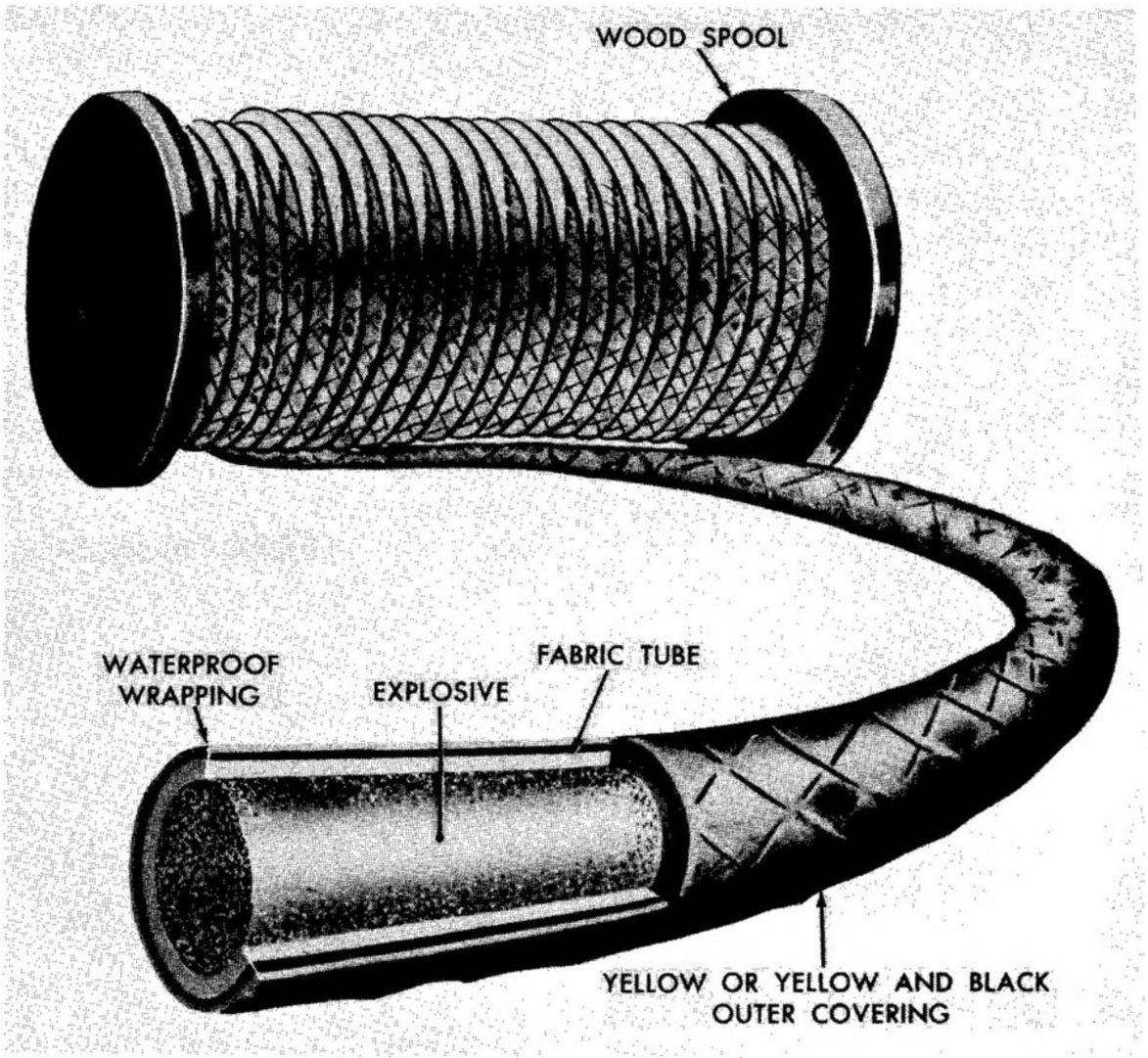


Figure 28. Detonating cord.

Normally, detonation is obtained by using any available electric or nonelectric No. 6 or No. 8 commercial blasting cap, or an equivalent issue cap. Detonating cord also detonates sympathetically with the detonation of an adjacent high explosive. The cord is packed and issued on wooden spools.

b. Lethal Characteristics. PETN detonates with a force sufficient to detonate other explosives to which it is properly fastened.

c. Application to Boobytraps. Whenever it is desired to detonate simultaneously several high-explosive charges placed in separate locations, detonating cord may be employed to transmit the detonation. Care must be exercised to tie the cord securely around each charge, to lay the cord straight without kinks or spirals, and to avoid damage to the fabric covering. Application of detonating cord to boobytrap construction is shown in several illustrations including figure 88.

33. Safety Fuse

a. Description. Safety fuse (fig. 29) contains black powder

tightly wrapped with several layers of fabric and waterproofing materials. The external covering is relatively smooth and may be black, white, or orange in color, orange being the most common. A safety fuse is used to transmit a flame which fires the explosive charge in a nonelectric cap. Time of burning varies considerably and a sample must always be tested prior to use in order to insure an adequate delay interval. Always cut off 3 inches or more from the end of a roll of fuse prior to burning a 1-foot length to determine actual burning time. Safety fuse is issued in 50-foot rolls.

b. Ignition. A fuse lighter or an ordinary match may be used to ignite a safety fuse. When using a match, insert its stem crosswise through a slit in the end or a hole punched in the fuse until the match head protrudes slightly from the side of the fuse. Ignition is obtained by sharply drawing the abrasive side of a match box across the head of the match.

c. Application to Boobytraps. Safety fuse may be used to transmit action within a boobytrap. Because of the delay in burning time, safety fuse should be used only when delay is desired. When accurate timing is necessary, safety fuse is unreliable because its rate of burning may vary from day to day, due to

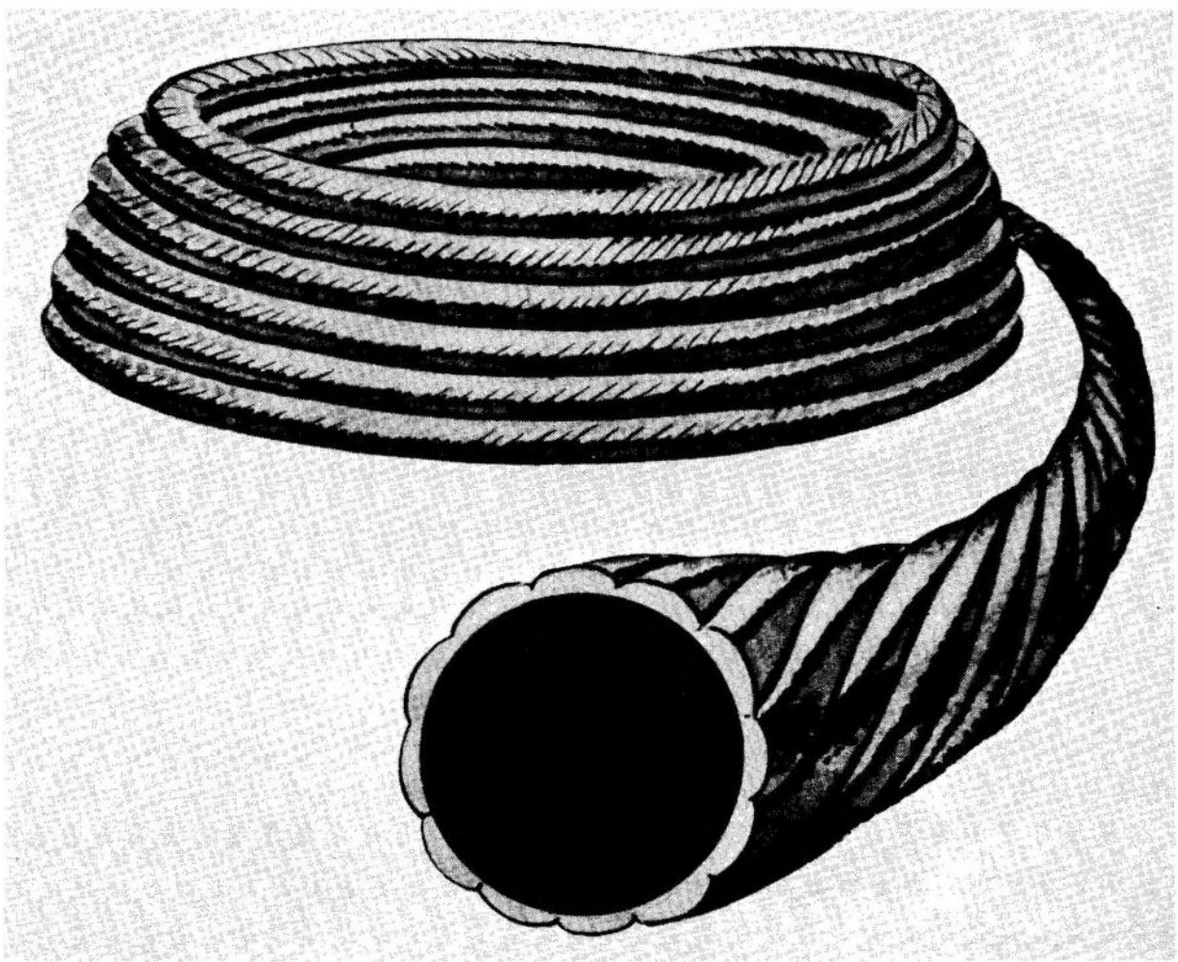


Figure 29. Safety fuse.

climatic variations. Whenever it is used, safety fuse must enter blasting cap without forcing and approved crimpers must be used to crimp cap to fuse.

34. Fuse Lighters

Fuse lighters are used to facilitate lighting of a time or safety fuse. They are particularly useful in lighting fuses in the wind. Two types of fuse lighters are available for issue, and may be used in boobytrap construction.

a. M1 Friction Type Fuse Lighter. This lighter (fig. 30) is a paper tube containing friction powder which is mechanically ignited. The open end, when placed over a time fuse, is held in place by teeth inside the fuse lighter. Inclined so they permit a fuse to enter, these teeth prevent its removal except by force. A pull on the handle at the closed end, such as provided by a trip-wire in a boobytrap, ignites power in the lighter, which in turn ignites fuse powder train.

b. M2 Weatherproof Fuse Lighter. This lighter (fig. 31) will ignite a time or safety fuse under all weather conditions, and even under water, when properly prepared by waterproofing. It consists of a metal barrel, which holds a firing mechanism, and a base which contains a percussion cap and a pronged fuse retainer. A sealing compound is used to waterproof the joint between fuse and lighter. When the striker-retaining pin is pulled, the striker fires the percussion cap, which in turn ignites the fuse. In using a fuse lighter in a boobytrap, the lighter must be firmly fixed in place so that movement of trip-wire will pull the handle or release pin sufficiently to operate the lighter. Use of weatherproof lighters insures greater reliability in boobytrap action.

35. Priming Adapter

a. Description. A priming adapter (fig. 32) simplifies the priming of military explosives having threaded cap wells. It is a plastic cylinder approximately 1 inch long, with a shoulder inside one end large enough to permit safety fuse or detonating cord to pass through, but too small for a blasting cap. The other end is threaded with a $^{9}/_{16}$-inch male thread which fits the female thread of threaded cap wells. Adapters are slotted longitudinally so that wires of an electric blasting cap can be inserted easily and quickly.

b. Use. This device is used frequently in boobytraps. When employed with an electric blasting cap, lead wires are threaded through an adapter and the blasting cap is secured in a demolition block as shown in A1, A2, A3, and A4 of figure 32. When a

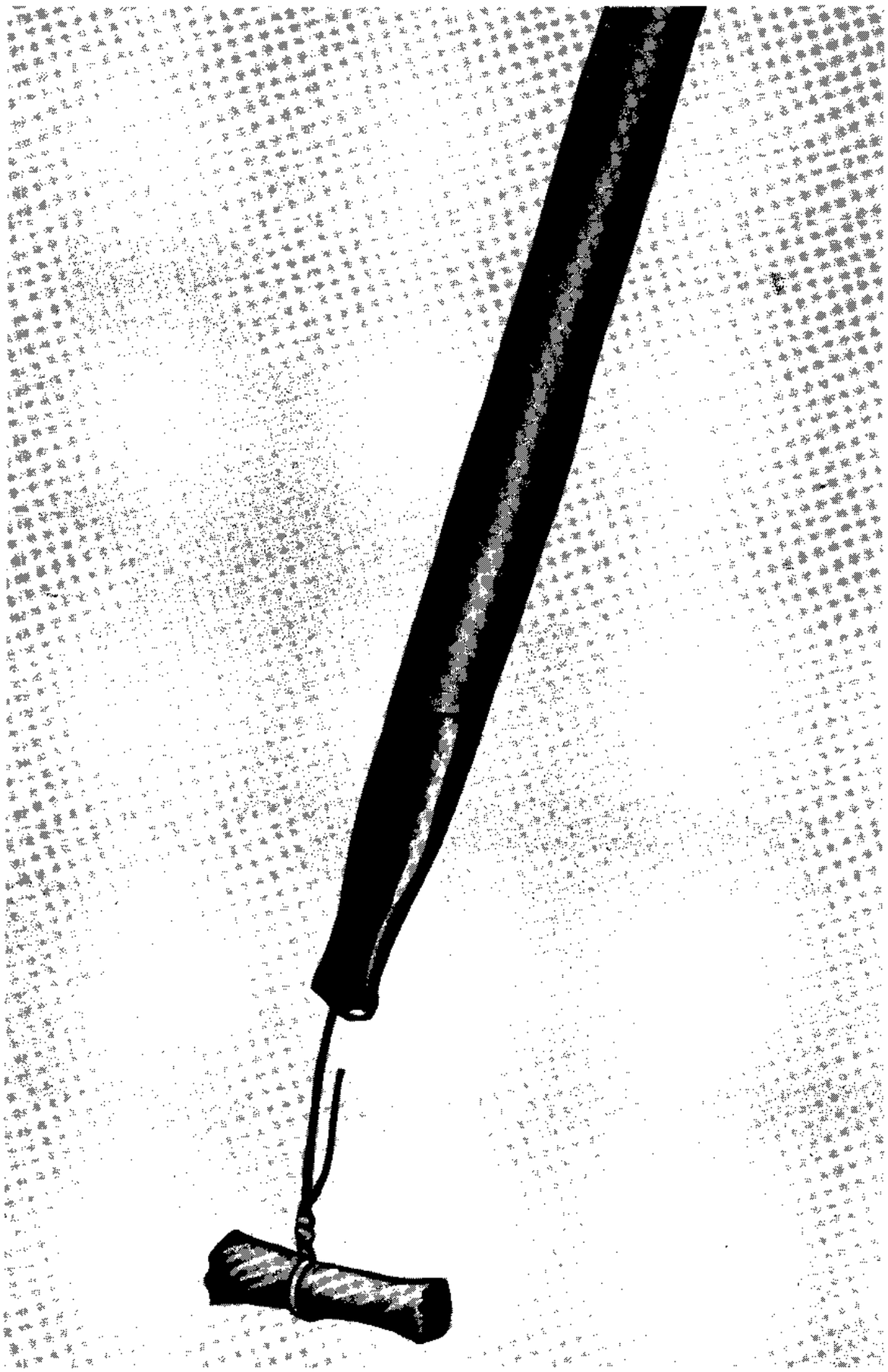


Figure 30. M1 friction type fuse lighter.

nonelectric cap and safety fuse are used, proper procedure follows sequence shown in B1, B2, and B3 of figure 32. When a detonating cord is used, follow the latter procedure.

36. Standard Delay Detonators

Standard delay detonators are devices for detonating explosive charges after a definite period of delay. The iniating mechanism, delay system, and detonator are all integral parts of a unit. Time delay varies with temperature changes and accurate timing is not possible. Changes may vary from minus 1 to plus 4 seconds from established standards.

a. Fifteen-Second Delay Detonator. This detonator (fig. 33) may be used with any boobytrap explosive charge having a threaded cap well, whenever a delay of approximately 15 seconds is desired. It consists of a pull-type fuse lighter, a 15 second length of fuse, and a blasting cap. It is water resistant and may be fired under water. A cap protector fits over the cap for protection during transit. Used in a boobytrap, this delay detonator requires a pull on the pull ring similar to that obtained by use of a trip-wire. The charge must be secured in place.

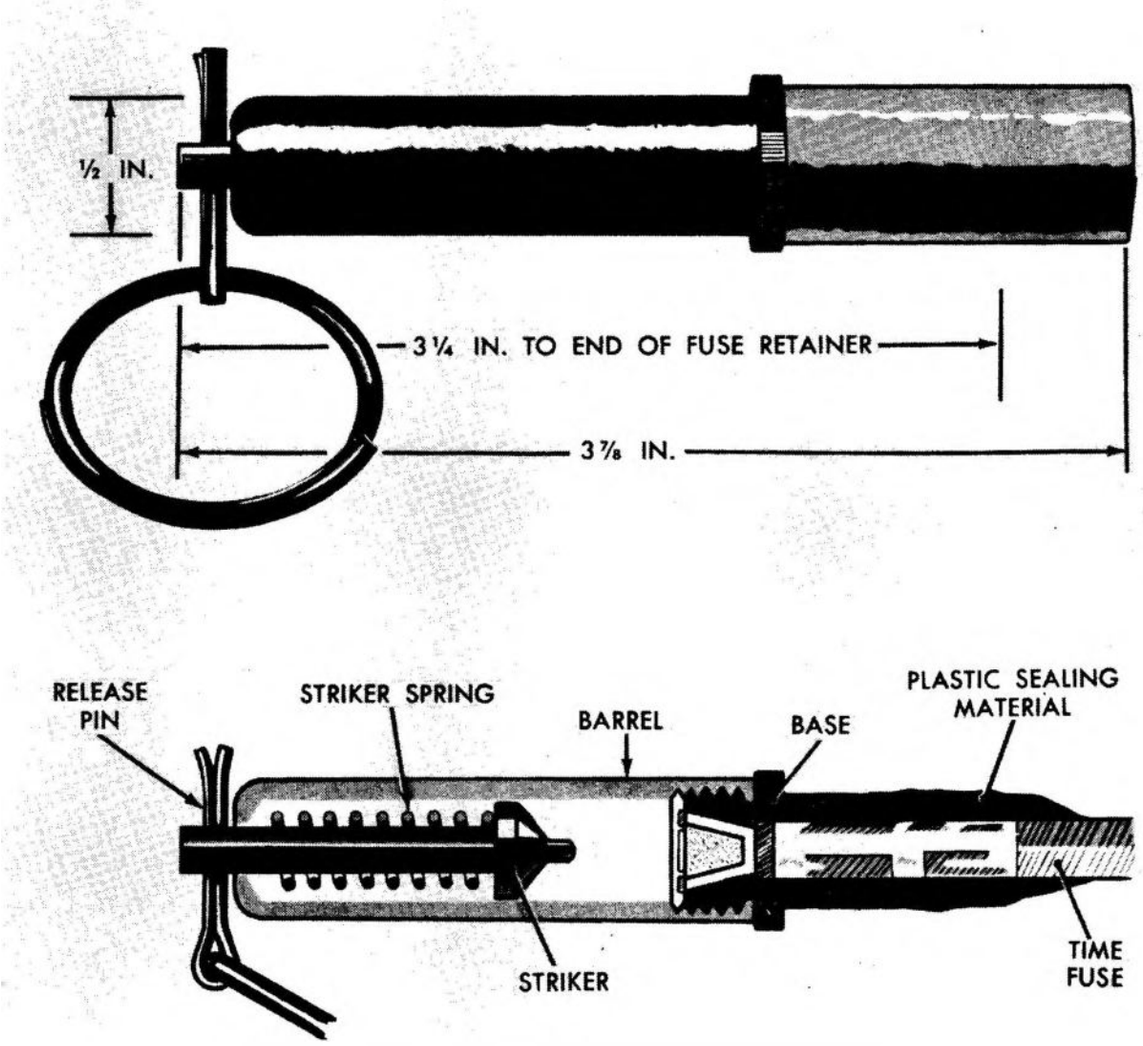


Figure 31. M2 weatherproof fuse lighter.

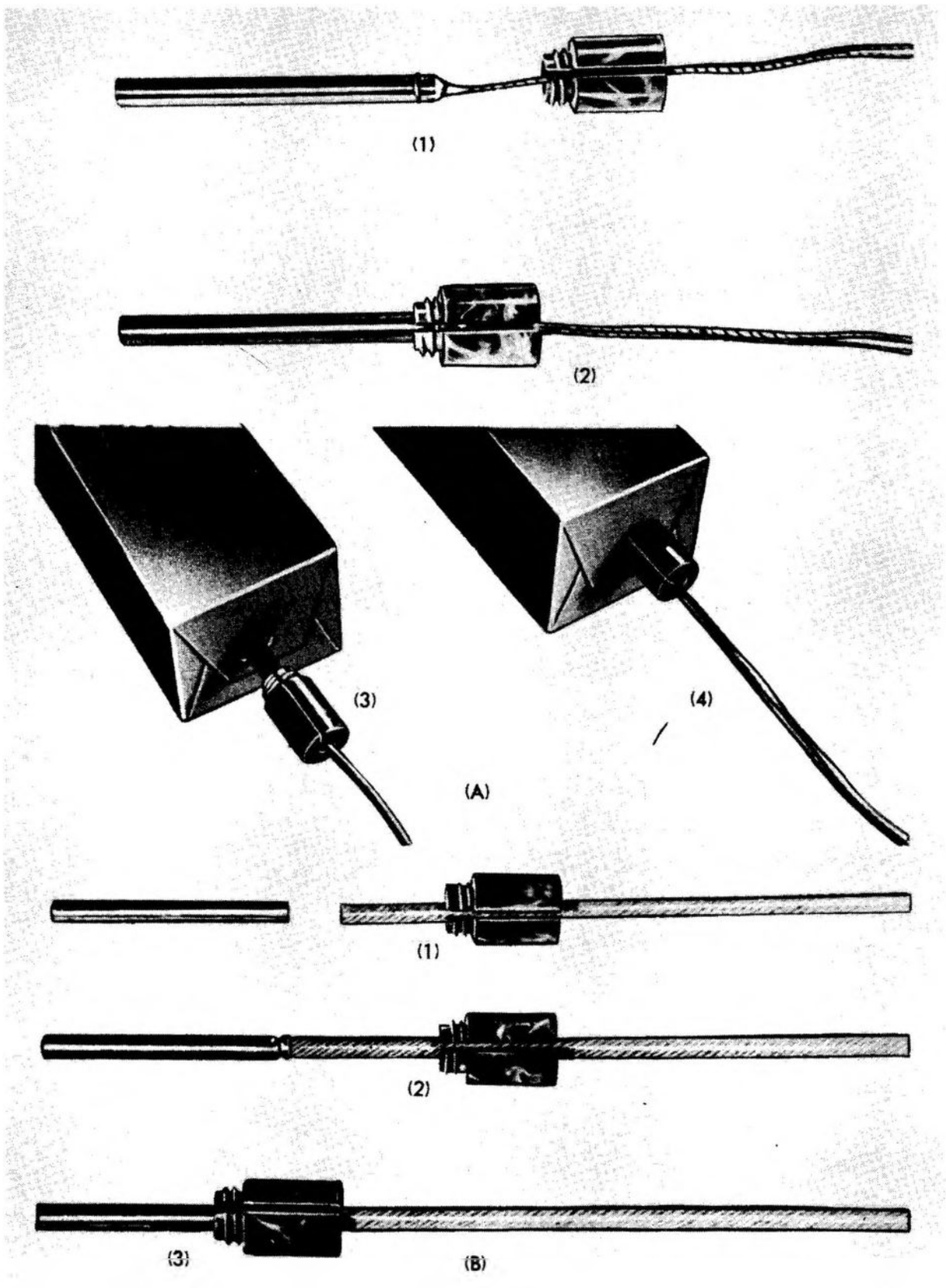


Figure 32. Method of using priming adapter.

b. Eight-Second Delay Detonator. This device (fig. 34) is constructed like the one just described except that it is shorter and contains a shorter length of time fuse to cut delay down to approximately 8 seconds. Also, the pull-wire has a wire T-shaped handle instead of a pull ring. Method of use with boobytraps is the same as that described for the 15-second delay detonator.

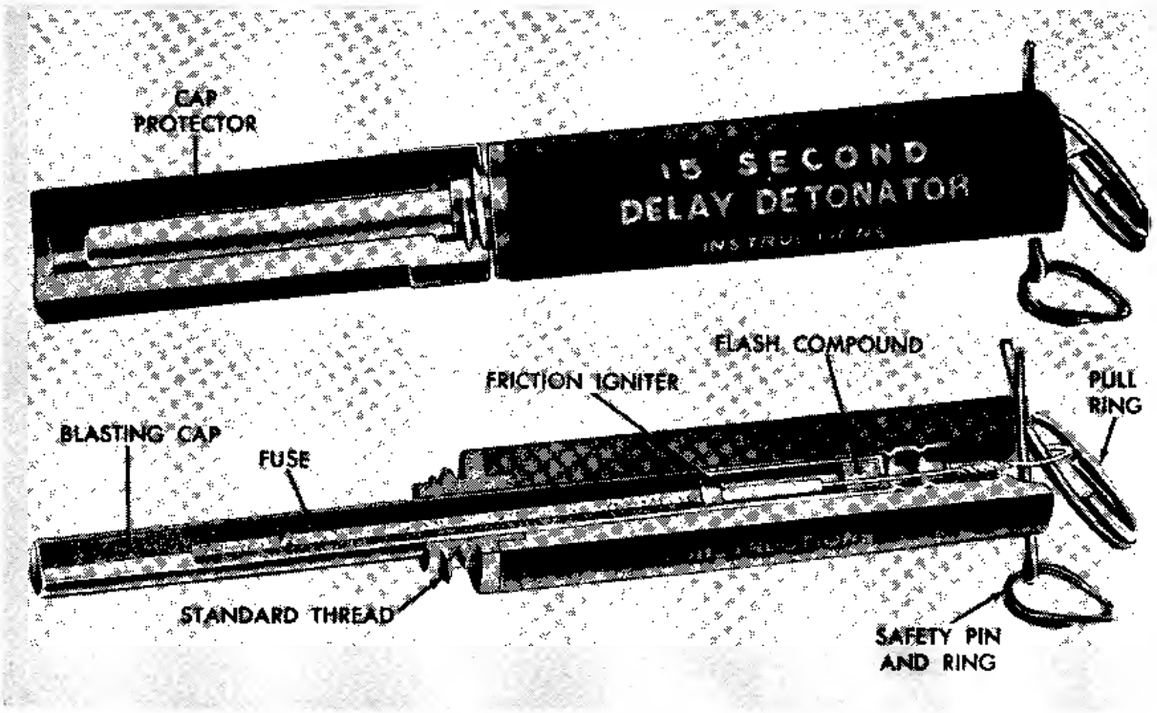


Figure 33. Fifteen-second delay detonator.

Section II. FIRING DEVICES

37. Firing Device, Pressure Type, M1A1

a. Description. Made of metal and measuring 2½ by 1½ inches, this nonelectric firing device (figs. 35 and 36) may be used to detonate antipersonnel mines and other explosive charges, including boobytraps.

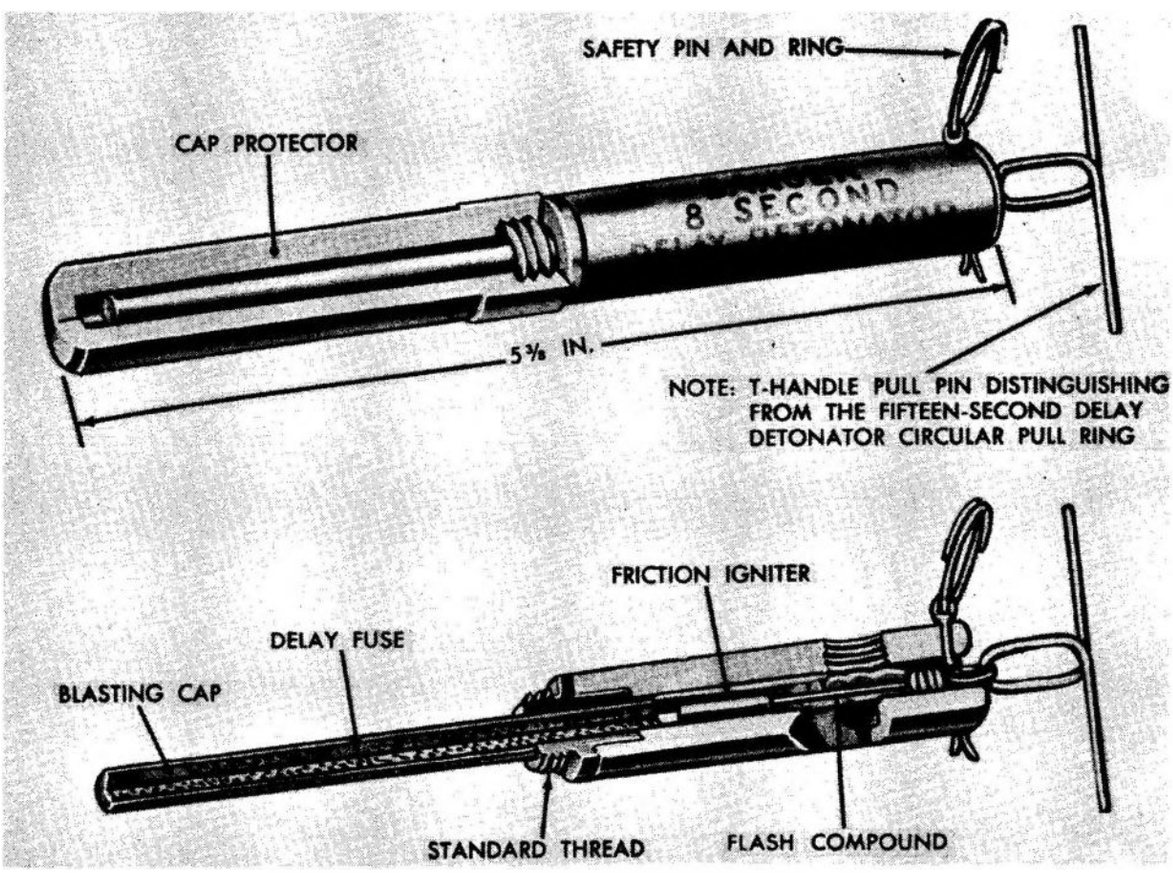


Figure 34. Eight-second delay detonator.

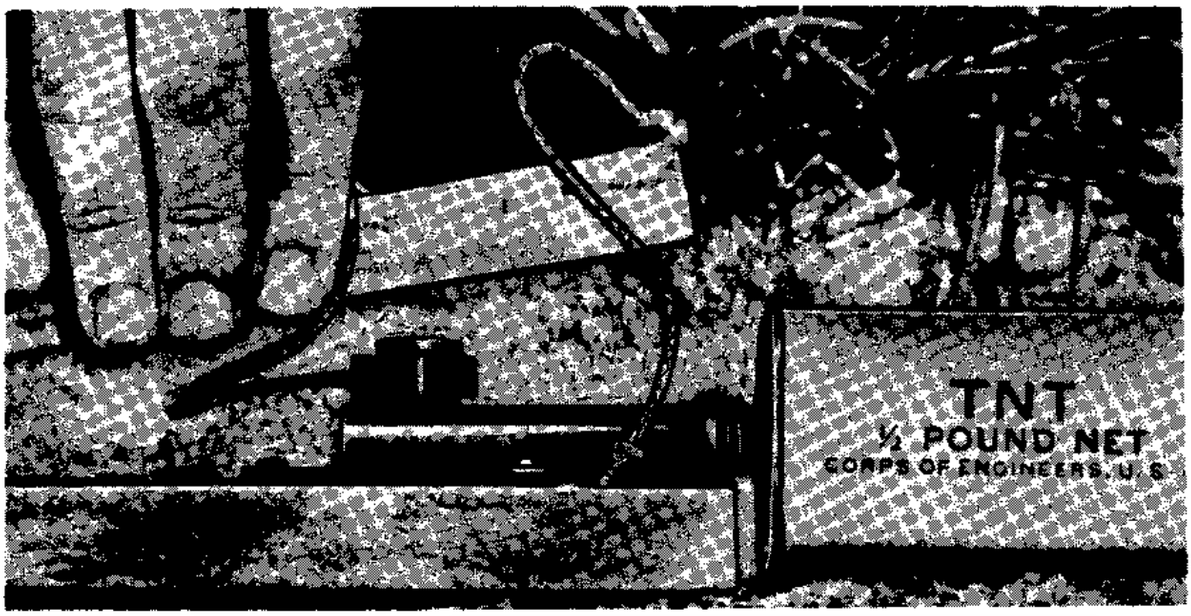


Figure 35. Firing device, pressure type, M1A1, used with a demolition block.

(1) This device consists of three parts, a barrel, head, and base. The barrel is a cylindrical tube with three flat projections used to fasten firing device to a supporting surface. On top of the barrel near the closed end is a hole through which a trigger pin is inserted. Within the barrel is a striker assembly and safety pin.

(2) Striker assembly consists of a trigger pin, trigger pin spring, striker, and striker spring. The trigger pin has a keyhole slot at its lower end. A button at the top has a threaded hole to receive either a 3-pronged pressure head or an extension rod that may be adjusted to raise point of contact up to a pressure object. A necked-down section near rear end of striker fits into narrow end of keyhole slot when in the armed position.

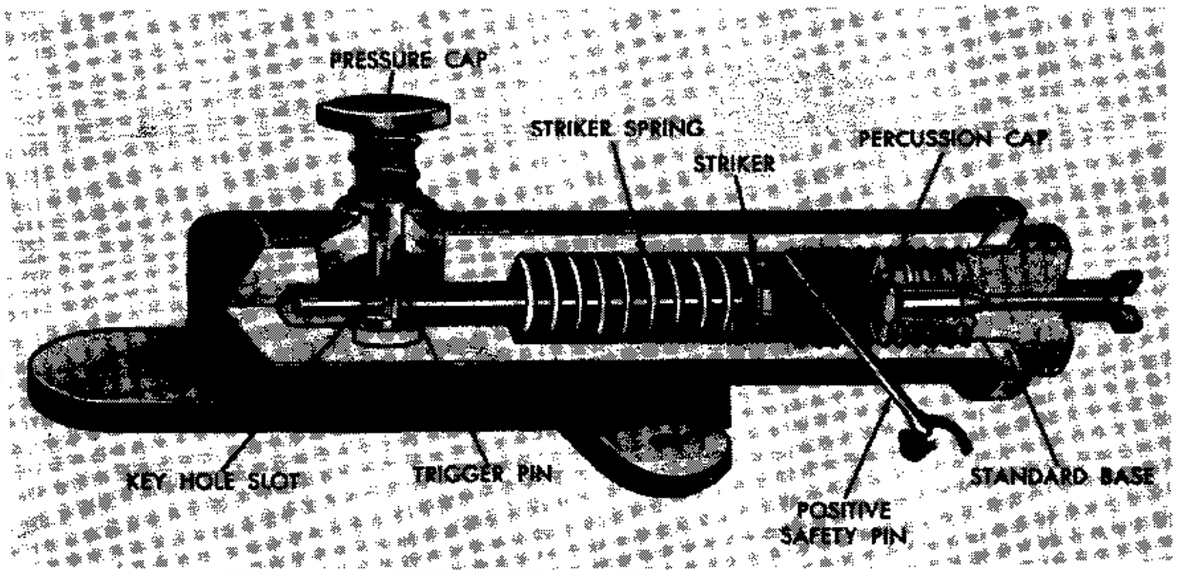


Figure 36. Cutaway view of firing device, pressure type, M1A1.

(3) A standard firing device base screws into the open end of the barrel. This standard base is a small threaded fitting with a percussion cap well in one end and, on the other, a long nipple over which may be crimped a nonelectric blasting cap.

b. Functioning. This type of mechanism is designed to function when pressure, such as results when it is stepped on by a person, is applied to the cap. For this reason a solid foundation is necessary to hold firing device in a fixed position.

(1) With safety clip removed from pressure cap and safety pin withdrawn from barrel, a force of 20 or more pounds applied to pressure cap will overcome resistance of trigger spring and cause trigger pin to move into barrel, releasing striker spindle which, under pressure of its spring, drives striker forward into percussion cap.

(2) Detonation of percussion cap fires a nonelectric blasting cap crimped to projection on base. Blasting cap detonates charge.

c. Testing. Serviceability of this fuze may be determined by simple tests of springs and release mechanisms.

(1) After removing safety clip and positive safety pin, and reversing base so that its projection is inside barrel facing striker, pressure is applied to pressure cap. Striker should strike base sharply to be serviceable.

(2) Recock assembly by pushing striker with a pencil or small rod, and at the same time pressing on pressure cap so striker spindle can pass through larger part of keyhole slot in trigger pin.

(3) Release of pressure on pressure cap allows smaller part of keyhole slot to engage reduced section of striker spindle.

(4) Disarm firing device by replacing safety pin and clip.

d. Installing and Arming. Use of this firing device in a booby-trap is shown in figure 35. When so used to following installation steps are prescribed—

(1) With standard base removed, place firing device on a firm, solid footing.

(2) When adjustment rod is needed, screw it into pressure cap. Adjust by screwing up adjustment rod snugly against pressure object, then back off one quarter turn. When three-pronged attachment is to be used, screw it into pressure cap.

(3) Remove protector tube and crimp a U.S. nonelectric cap onto standard base.

(4) Screw base to firing device.
(5) Insert cap in charge. When detonating cord is used, tape one end of cord to cap and run other end to charge.
(6) Remove safety clip which should pull off easily. A sudden jerk may cause fuze to fire. When safety clip does not pull off easily, check installation to make sure there is no pressure on pressure cap.
(7) Remove safety pin. When pin does not come out easily, striker head probably has fallen and is pressing against it. Unscrew base and check mechanism. When defective, a firing device should be discarded.

e. Neutralizing. When a boobytrap using this devise is neutralized the following actions are required—
(1) Disarm by replacing safety pin and safety clip.
(2) Separate charge from firing device.
(3) Unscrew and destroy base or store in safe place. *Do not attempt to remove blasting cap from base.*

f. Re-Use.
(1) This model firing device may be re-used any number of times so long as components remain serviceable.
(2) After use a firing device should be cleaned, lubricated, tested, and a new percussion cap pressed firmly into place.

g. Packaging. Five firing devices, complete with percussion caps, are packed in a cardboard box, a full box weighing 1 pound, 14 ounces. 30 boxes (150 devices) are shipped together in a wooden box.

38. Firing Device, Pull Type, M1

a. Description. This nonelectric mechanism is designed primarily for use with a trip-wire for firing antipersonnel mines and boobytraps (fig. 37).
(1) This firing device is a pull operated percussion type consisting of a case made of alloy metal, a striker assembly, and standard base.
(2) There is a constriction inside the case (fig. 38). A release pin, with pull ring attached, passes through aperture in head and extends into firing device case. It is held in a cocked position while release pin spring holds release pin against constriction. A striker within the case has a shaft that is split into four segments, each segment having a beveled flange on its outer edge. When in a cocked position, striker passes through constriction in case and is wedged against it by end of

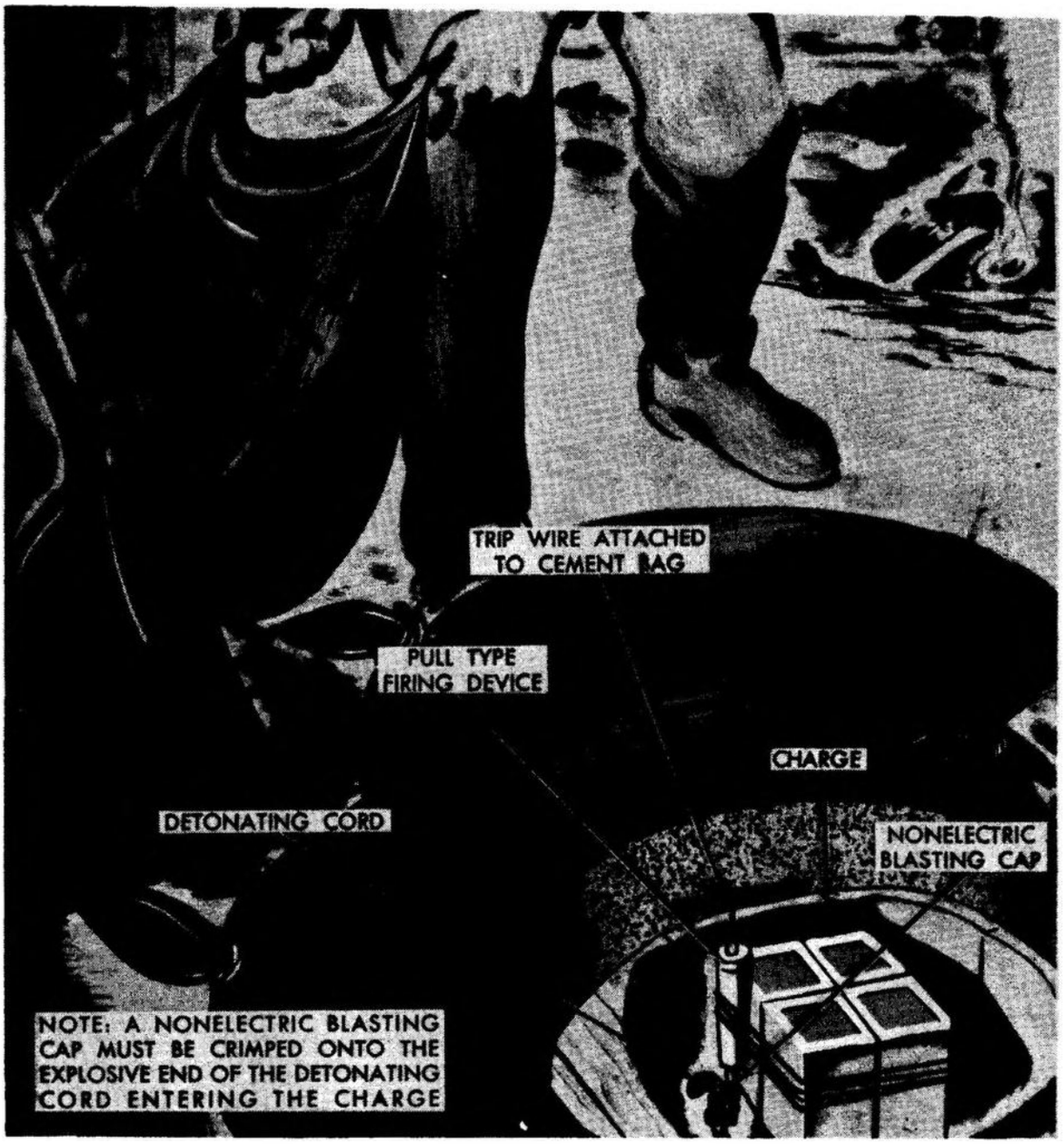

TRIP WIRE ATTACHED TO CEMENT BAG
PULL TYPE FIRING DEVICE
CHARGE
DETONATING CORD
NONELECTRIC BLASTING CAP
NOTE: A NONELECTRIC BLASTING CAP MUST BE CRIMPED ONTO THE EXPLOSIVE END OF THE DETONATING CORD ENTERING THE CHARGE

Figure 37. Boobytrapping supplies.

release pin which spreads triker segments apart. A stardard base with percussion cap and nonelectric primer is used.

(3) Safety pins in the head and through the case prevent premature firing.

(4) An integral anchoring lug on outside of case is used in securing device during installation of a boobytrap. A pull ring provides suitable attachment for trip-wire.

b. Functioning. This mechanism is designed to operate when a person or vehicle moves a trip-wire pulling release pin. Device must be firmly anchored in place so that pull will displace release pin rather than move firing device.

(1) When safety pins are removed, a pull of from 3 to 5 pounds applied through a distance of about 1/32-inch is sufficient to overcome resistance of loading spring,

and cause tapered end of release pin to be withdrawn from within the split head of striker.

(2) Being no longer forced against constriction in collar, the split head of striker slips through and, driven by its spring, the striker sets off percussion cap in base.

c. Testing. Serviceability of this device is determined by testing springs and safety devices for proper action as follows—

(1) Remove standard base.

(2) Check both safeties for freedom of movement and then remove them.

(3) With open end of case held firmly against a wooden object, grasp pull ring in right hand and pull with a

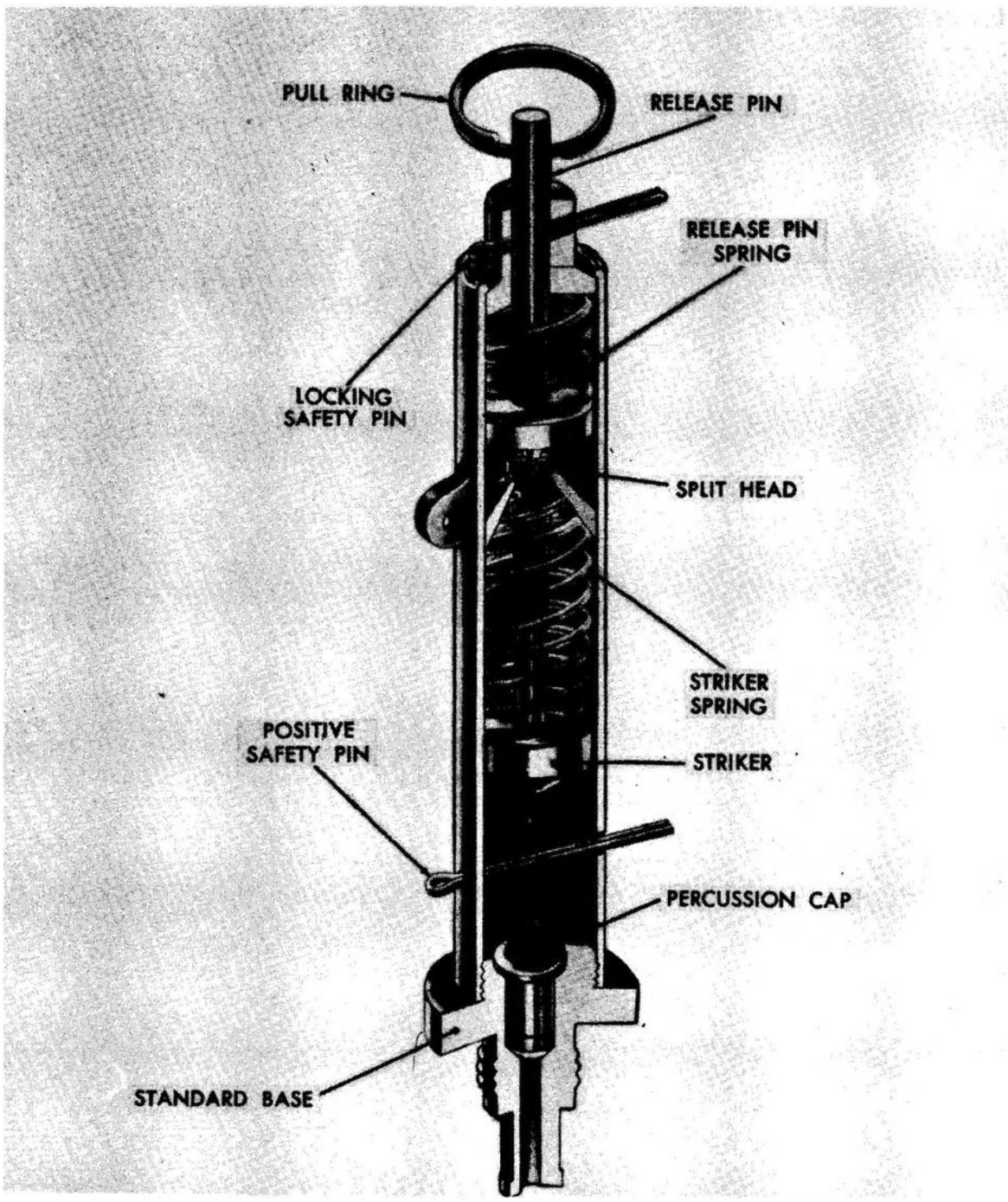


Figure 38. Cutaway view of firing device, pull type, M1.

slight steady tension until striker is released and hits the wooden object.

(4) Holding the firing device in hand, remove striker and striker spring. Examine the four segments of hollow split shaft of striker to see that they are serviceable.

(5) Firing device is recocked holding mechanism in the left hand so that thumb and forefinger grasp the pull ring. Insert spring and striker into body and pull release pin as far back as it will go. With a recocking tool push striker back through constriction, then free release pin. Device is now cocked.

(6) Replace the positive safety, then insert locking safety.

d. Installation and Arming. Illustration of a pull type firing device being used with a boobytrap is shown in figure 37. When pull type, M1, is used, the following steps are prescribed—

(1) Check safeties for ease of movement.

(2) Remove base as a safety precaution.

(3) Discard protector tube and crimp on a U. S. nonelectric cap.

(4) Return base to firing device.

(5) Insert cap in charge, or when detonating cord is used, tape one end of cord to cap and other end to charge.

(6) Anchor boobytrap with anchor cord.

(7) Install loose trip-wire attaching anchor end first.

(8) Remove safety devices, the locking safety pin first. Should either safety pin resists movement, note source of trouble. When defects cannot be corrected, a firing device is discarded.

e. Neutralizing. Should it become necessary to neutralize a boobytrap using this firing device, the following steps are necessary—

(1) *Disarming.* Replace positive safety pin first and locking safety pin last. Disconnect trip-wire.

(2) *Defuzing.* Remove firing device from charge. Unscrew base for destruction or safe storage. *Do not attempt to remove cap from base.*

f. Re-Use. This firing device can be re-used any number of times so long as components remain in serviceable condition.

g. Packaging. These firing devices are packed in chipboard boxes, each box containing five devices complete with percussion caps and two 80-foot spools of light trip-wire. Thirty boxes (150 devices) are packed for shipment in a wooden box.

39. Firing Device, Delay Type, M1

a. Description. This is a percussion type, chemically operated firing device, used in detonating a delayed action mine or boobytrap (figs. 39 and 40). Device cannot be test fired.

(1) Firing device consists of a body divided into two compartments. Lower compartment contains a spring loaded stricker held by a wire that passes to upper compartment. Attached to wire in upper compartment is a glass vial of acid.

(2) Lower compartment is made of brass and upper compartment is made of copper. Base is nonremovable. Located in lower compartment just above standard base are two openings. Top opening is an inspection hole, while bottom opening is a rectangular slot containing a colored identification and safety strip.

b. Delay Characteristics. There is a delay between time of activation and time of firing.

(1) Delay of from 4 minutes to 9 days is provided, depending upon respective model and prevailing temperature.

(2) Delay time is approximate only and this device is not suitable where accurate timing is required.

(3) A card found in each box gives delay time for firing devices of each color, and at different temperatures.

c. Functioning.

(1) Breaking of ampoule releases a corrosive liquid in the top half of firing device.

(2) Corrosive liquid eats through restraining wire, releasing firing pin.

(3) Firing pin, driven by spring, fires percussion cap.

d. Installing and Arming. An illustration of a boobytrap using this firing device is shown in figure 86. When so used, the following steps are prescribed—

(1) Consult card found in each box for tab color that gives required delay at prevailing temperature.

(2) Select fuze having a safety strip of this color.

(3) Look into or insert nail through inspection holes to make sure firing pin has not been released. Inspect portion of firing device that contains ampoule to see that it has not been crushed.

(4) Remove protector from base and crimp on U.S. nonelectric cap.

(5) Insert cap in charge or, if detonating cord is used, tape one end of cord to cap and run other end to charge.

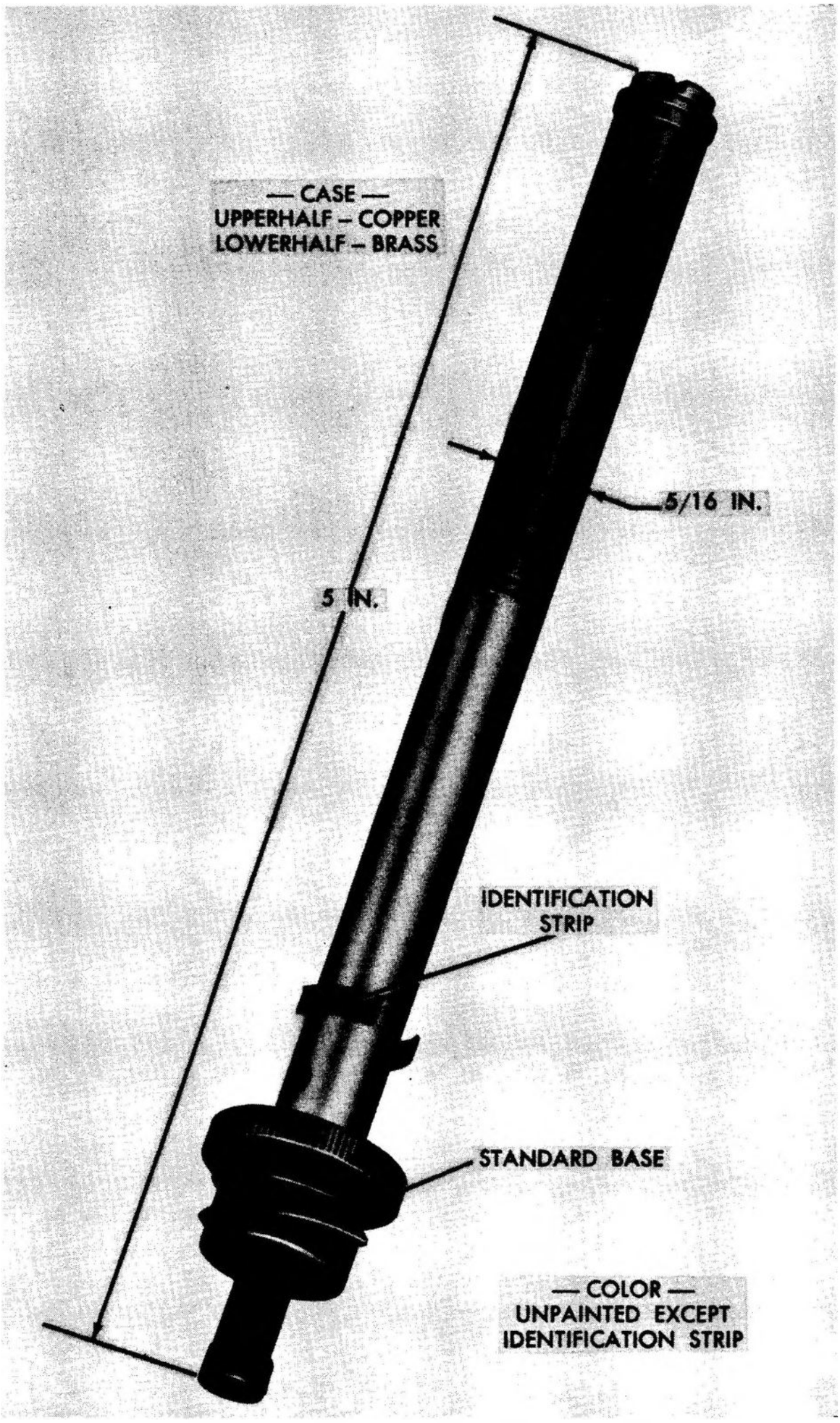


Figure 39. Firing device, delay type, M1.

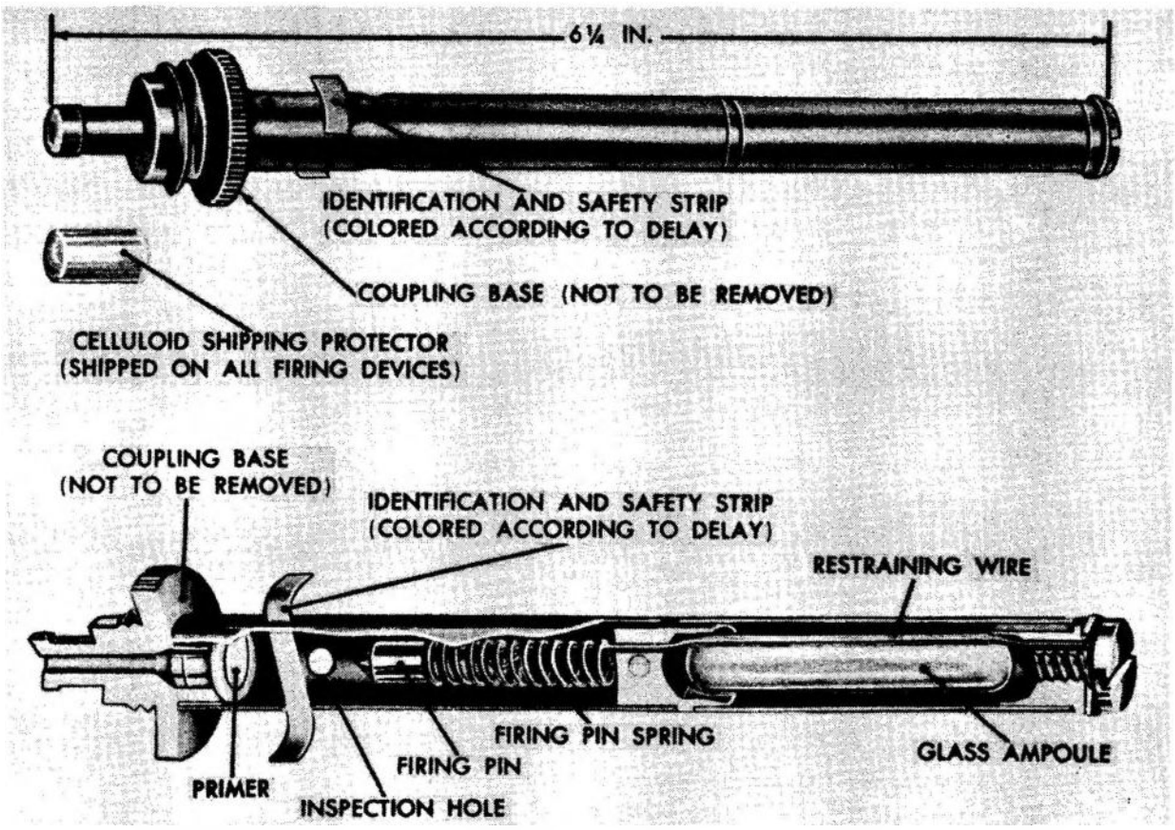


Figure 40. Cutaway view of firing device, delay type, M1.

(6) Crush ampoule by squeezing and flattening the copper portion of the tube wall.
(7) Inspect through hole to see if striker has fallen.
(8) Withdraw identification and safety strip.

e. Neutralizing.

(1) There is no safe way of disarming this firing device. Should disarming be absolutely necessary, insert an improvised safety pin through inspection holes.
(2) Re-use of device is impossible after its ampoule has been crushed.
(3) Disconnection of firing device and charge will neutralize boobytrap.

f. Packaging. Ten firing devices are packed in a paperboard box. Included in each box are 2 red, 3 white, 3 green, 1 yellow, and 1 blue, together with a time-delay table. Ten paperboard boxes are packed in fiberboard box and five fiberboard boxes (50 sets) are packed in a wooden box.

g. Caution.

(1) While this mechanism is an excellent device for use when boobytraps are left in an area to be occupied by enemy troops over a considerable period of time, its use is inadvisable where friendly troops are likely to approach its installation.

(2) Time-delay period starts when ampoule is ruptured, not when safety is withdrawn.

40. Firing Device, Pull-Release Type, M3

a. Description. This device may be used advantageously in a boobytrap when use of a trip-wire, having both pull and tension-release firing actions, is desired.

(1) Made of zinc alloy, and measuring 4¾ inches by ½ inch, this firing device consists of a cylindrical body, housing a spring-loaded striker release pin assembly and a standard base (figs. 41 and 42).

(2) Safety pins are provided to prevent premature operation of both release pin and striker.

(3) An anchoring lug, cast integral with firing device body, may be used to secure device in place.

(4) A release pin, with a small flange at inner end and knob at the other, enters body of device through a constriction in the head. Attached to its outside end, the release pin has a winch with a ratchet used to tighten its trip-wire.

(5) Striker assembly consists of a split hollow shaft and spring. Inside firing device body is a constriction about ¼ inch long. Top of striker has a flange on the inside which engages knob of release pin. Each segment of the split hollow shaft of striker has a built-up section near the top about ¼ inch long. So long as this section is held within the confines of the constriction within the body, striker is restrained by release pin.

(6) A tight trip-wire is used to hold the striker in this constricted section. Any movement, either in or out, beyond constricted area will fire the device.

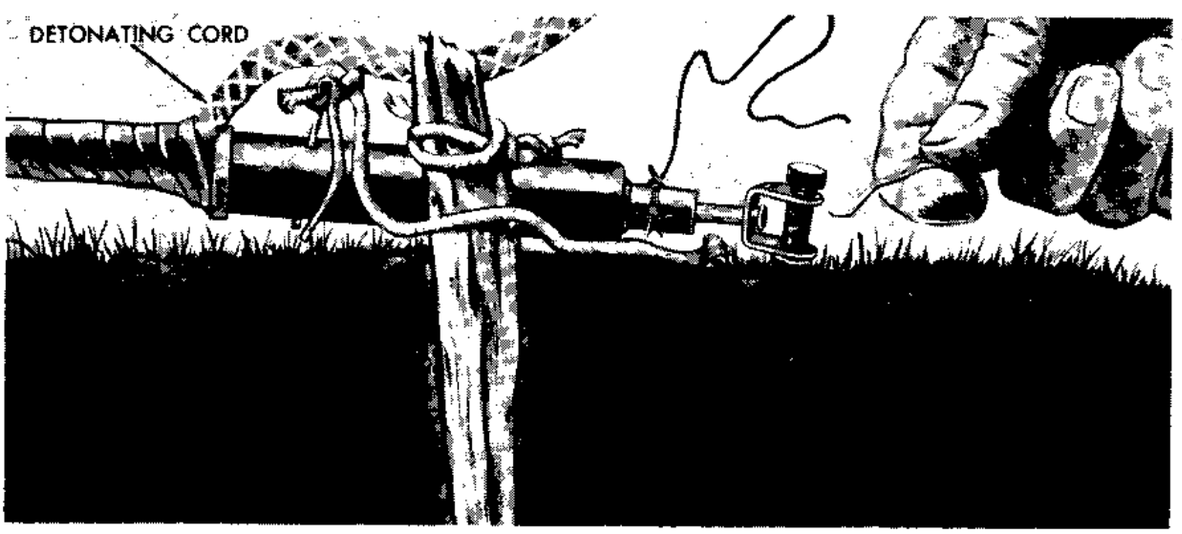


Figure 41. Firing device, pull-release type, M3, attached to detonating cord.

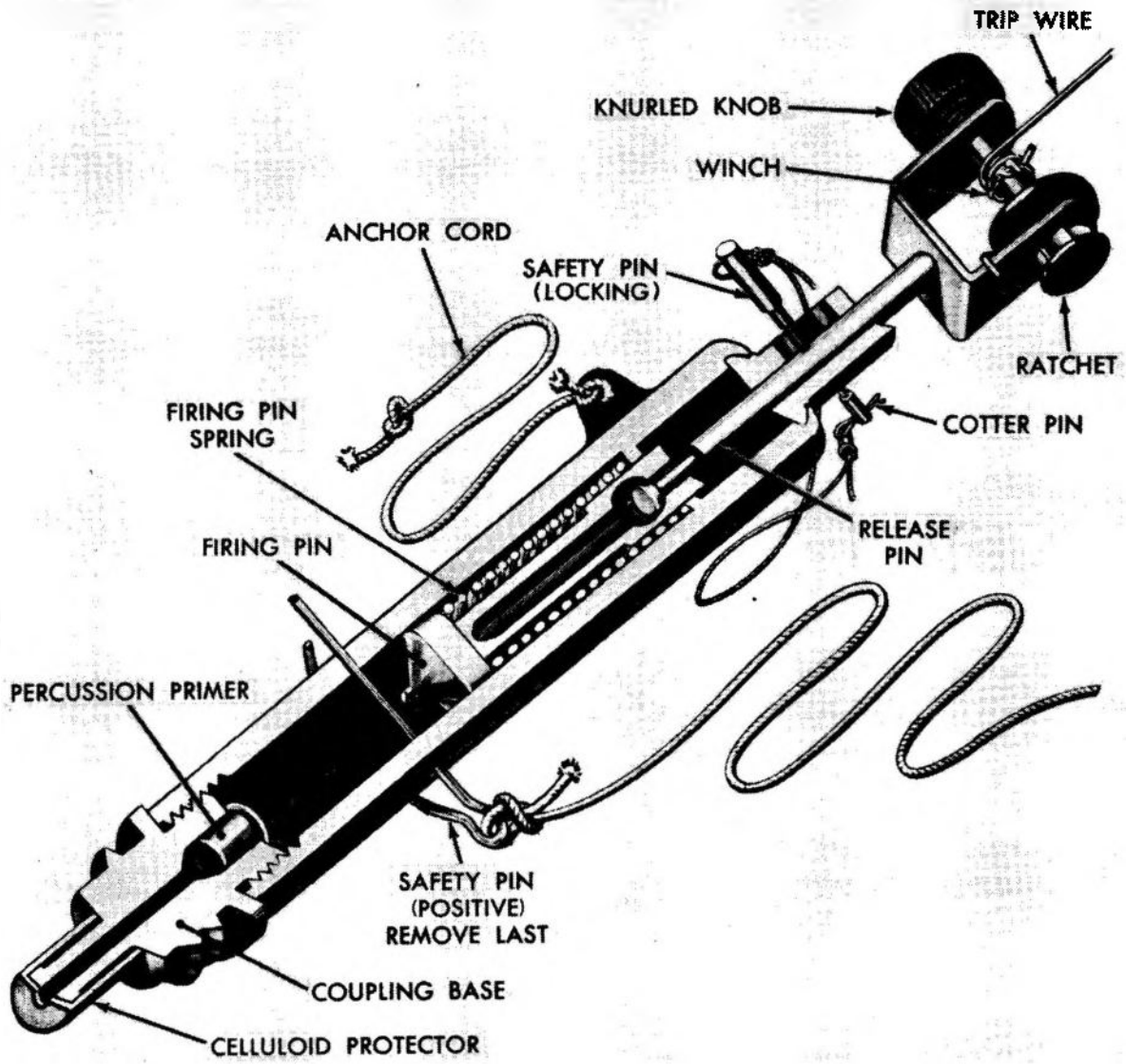


Figure 42. Cutaway view of firing device, pull-release type, M3.

b. Functioning.

(1) *Pull operation.* With pull of 6 to 10 pounds on trip-wire, release-pin assembly is pulled out until shoulder of striker passes constriction in barrel. Thus released, the four jaws of striker spring open and release pin pulls out of striker. Jaws of striker then spring back together enabling end of striker to pass through constriction. Released striker, driven by its spring, sets off percussion cap.

(2) *Tension-release operation.* Release of tension, such as detaching wire or cord at anchor end or cutting of trip-wire, permits release-pin assembly to move forward under influence of striker spring until striker clears constriction in barrel and release pin is stopped by head of firing device. As spring continues to force striker forward its four jaws are spread and pulled free of release pin knob. Released striker, driven by striker spring, sets off percussion cap.

c. Testing.

(1) Remove base and inspect percussion cap.

(2) Leaving safety pins in, pull winch assembly out until it is stopped by safety pin in head of fuze. Repeat this process two or three times. Winch assembly should move smoothly approximately ¼ inch and should require a force of 6 to 10 pounds. When an assembly hangs or moves too easily or with jerks, examine fuze and correct fault. Discard all defective fuzes.

d. Installing and Arming. Use of this device in a boobytrap is shown in figure 106. When so used, the following steps are prescribed—

(1) Remove base.

(2) Remove protector from base and crimp on U.S. non-electric cap.

(3) Attach base to firing device.

(4) Secure trip-wire at anchor end. Be sure this tie will not slip. This anchor must be firm enough to withstand a pull of at least 20 pounds. Unspool to anchorage at winch on firing device.

(5) Insert cap in charge or, if detonating cord is used, tape one end of cord to cap and run other end to charge.

(6) Anchor boobytrap and/or firing device firmly with anchor cord.

(7) Attach loose end of trip-wire so that it will not slip, using hole in winch spindle.

(8) Draw up trip-wire. Take up remaining slack by winding it on winch until locking safety pin is pulled into wide portion of its hole.

(9) Remove small cotter key from locking safety pin, and gently withdraw locking safety pin. If pin does not slide out easily, adjust winch winding.

(10) Using attached cord, pull out positive safety pin slowly and carefully. This pin should fall out easily. If it resists a gentle pull, replace locking safety pin, remove trip-wire by pressing down knurled nob and stripping off wire, remove base, and check mechanism. Discard defective firing devices.

e. Neutralizing.

(1) *Disarming* is attained by inserting first the positive safety pin, and then the locking safety pin, followed by removal of trip-wire by pressing down knurled knob and stripping off wire.

(2) *Defuzing* is obtained by removing firing device from charge and unscrewing base of device for destruction

or safe storage. *Do not attempt to remove blasting cap from base.*

(3) Interrupting an explosive train at any one of several points will nullify the action (fig. 43).

f. Packaging. Five firing devices are packaged together with two 80-foot spools of trip-wire. Five such packages form another package, six of which (150 devices) are packed in a wooden box.

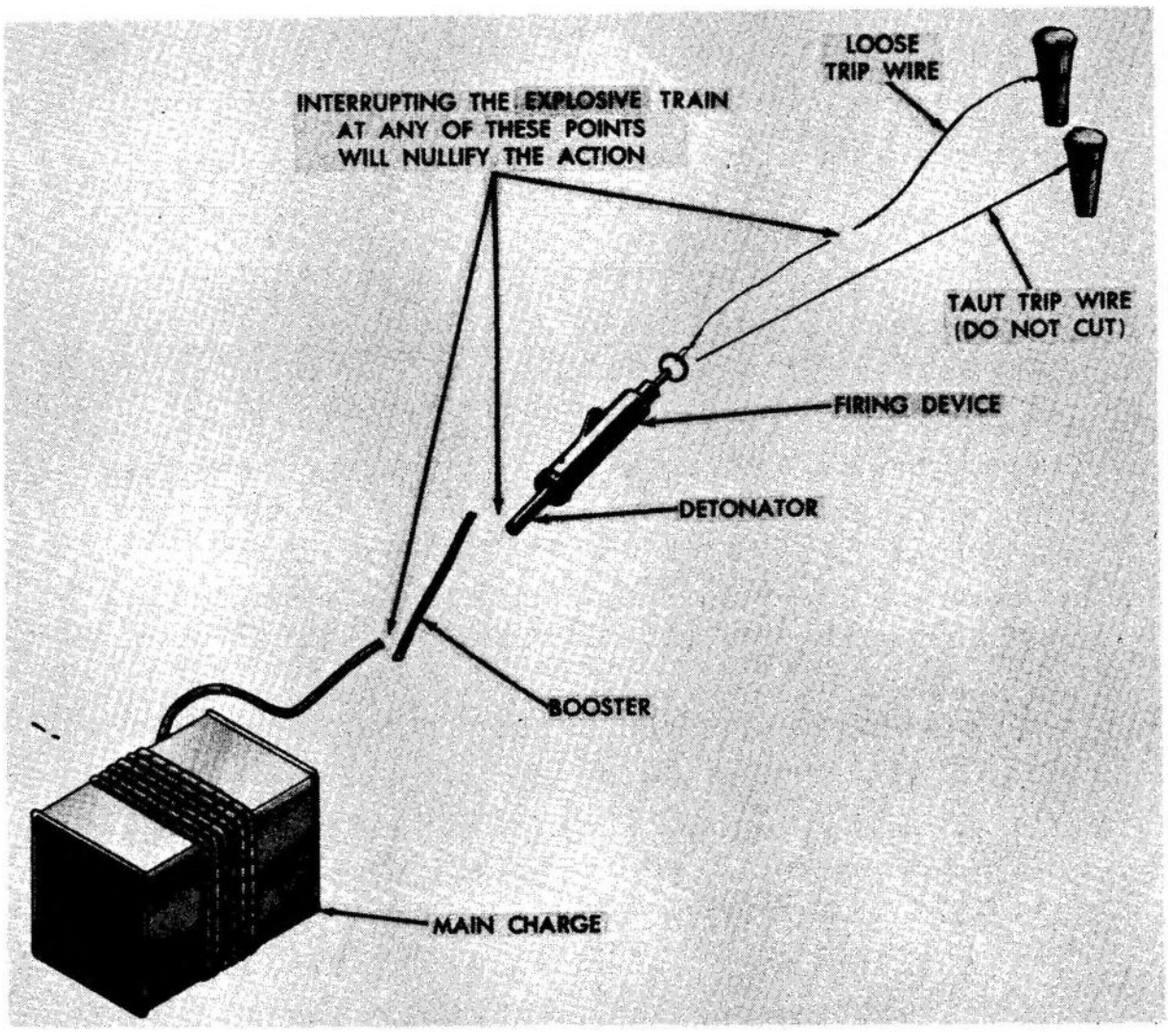

LOOSE TRIP WIRE
INTERRUPTING THE EXPLOSIVE TRAIN AT ANY OF THESE POINTS WILL NULLIFY THE ACTION
TAUT TRIP WIRE (DO NOT CUT)
FIRING DEVICE
DETONATOR
BOOSTER
MAIN CHARGE

Figure 43. Interrupting exlosive train.

41. Firing Device, Pressure-Release Type, M5

a. Description. This mechanism consists of a small steel rectangular box with a hinged lid (figs. 44 and 45). A spring-loaded striker is held in the armed position by the lid. A special locking safety pin holds the lid in closed position. The device uses a standard base screwed into an opening in the bottom. A positive safety hole (interceptor hole) is located on the side of the box. The device is adaptable for many kinds of boobytraps.

b. Functioning. A load of at least 5 pounds resting on the release plate is required to restrain this device. Some mines and elements weigh less than 5 pounds and are thus not heavy enough

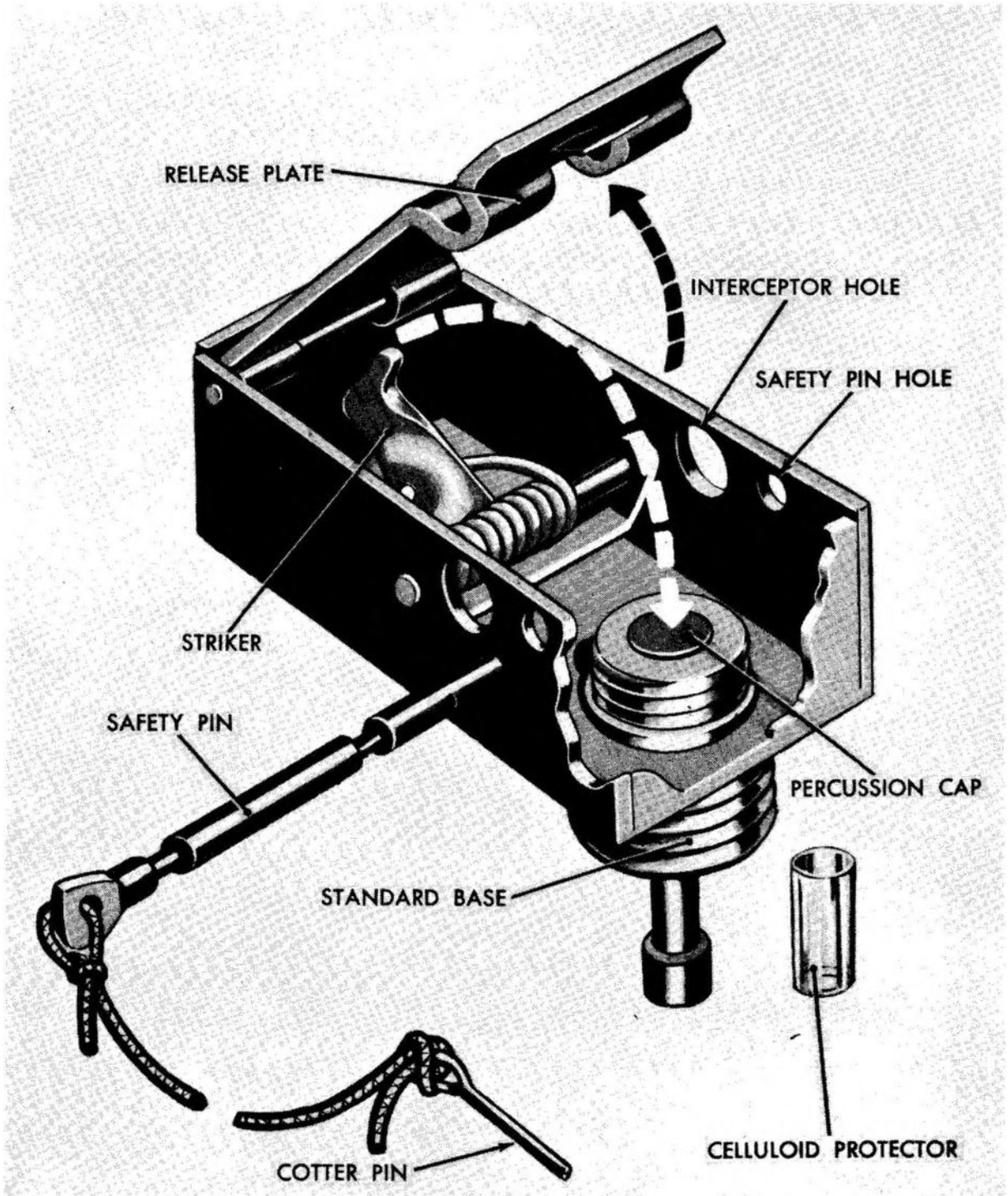


Figure 44. Firing device, pressure-release type, M5.

to hold down the release plate of the device. When load is removed or allows the striker spring to raise the release plate at least 5/8 inch, the striker, impelled by its spring, rotates about a pivot, strikes percussion cap and detonates the activator and any charge to which it may be attached.

c. Testing. It is unnecessary to test this device before using. Inspect device to make sure that there are no obvious defects, that striker is cocked, and that safety pin is in proper position.

d. Installing and Arming. Use of this device installed on a boobytrap is shown in figure 75. Being fairly small and simple to use, its use on simple boobytraps is quite extensive. When so used, the following steps are prescribed—

(1) Make sure safety pin is in proper position and remove small cotter pin.
(2) Holding the release plate down, replace the safety pin with a length of No. 18 wire.
(3) Insert a length of heavy gage wire through the interceptor hole.
(4) Bend each wire slightly to prevent its dropping out of the hole but avoid sharp-angle bends which would make it difficult to remove the wire. The use of nails in the safety pin hole or interceptor hole is very hazardous

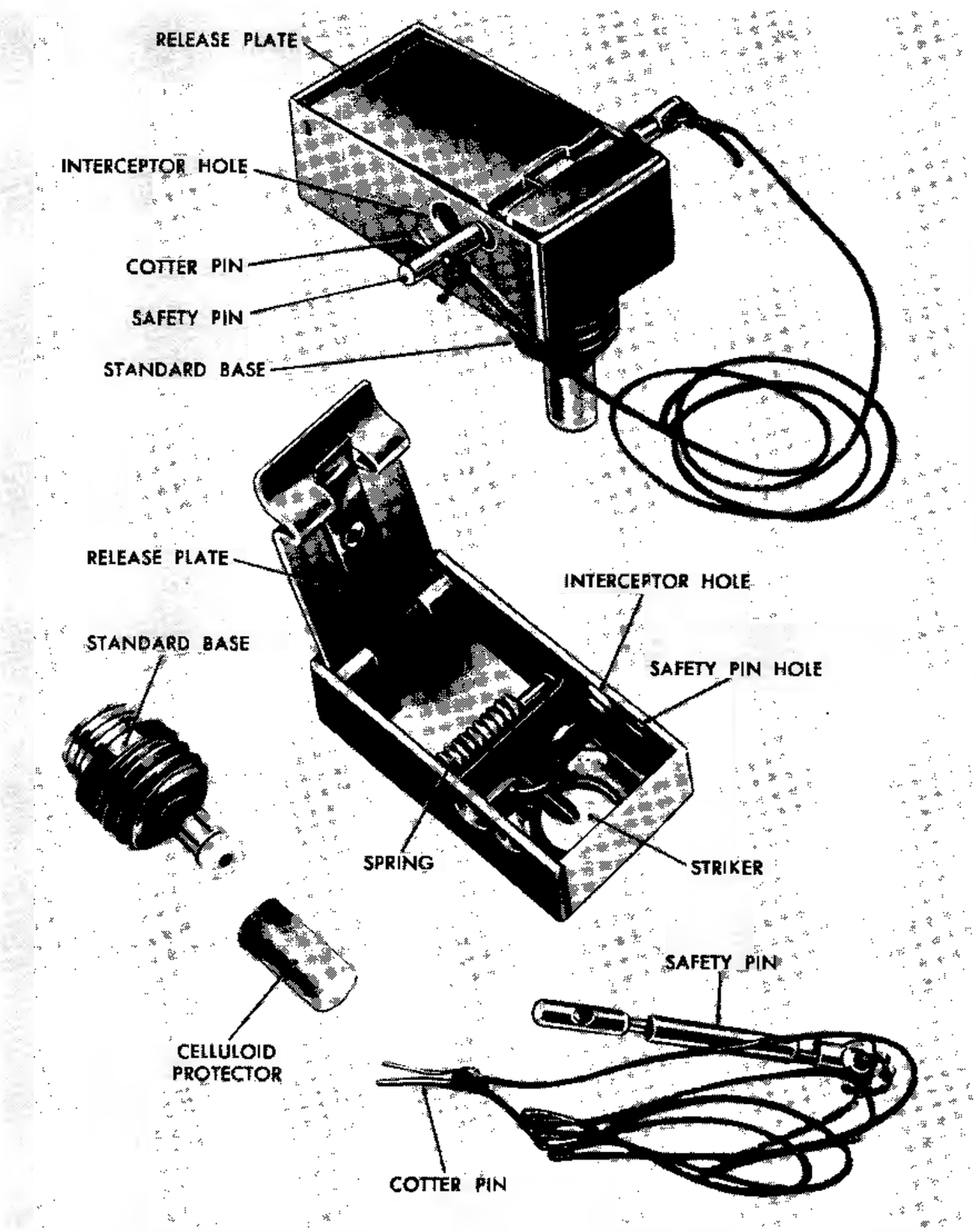


Figure 45. Components, firing device, pressure-release type, M5.

due to the danger of the nail falling out while placing the device. Nails should be used only in an emergency.

(5) If the firing device will be out of sight when finally installed, note that the heavy wire is inserted in the interceptor hole and the thin wire is in the safety pin hole.

(6) Remove standard base from the device.

(7) Remove celluloid protector from base.

(8) Screw activator on standard base.

(9) Screw the standard base complete with activator back into the device.

(10) Screw this assembly into threaded detonator-well of mine or explosive charge.

(11) Install so release plate will be closed by weight of mine, charge, or boobytrap bait, or by wedging device against some stable object. At least 5 pounds pressure must be exerted on release plate. If the device is in contact with the ground, use small fiber board issued with device to provide solid foundation. See that the safety wires are in the proper position and adjust installation so that they will slip out easily.

(12) Conceal device leaving ends of safety wires exposed. In some cases, where the device is not totally concealed and is easy to reach, the safety pin with cord attached may be used in the safety pin hole.

(13) Remove the thin gage safety wire from the safety pin hole by gently pulling the wire. If it does not come out easily, restraining force is probably insufficient or improperly placed. Check for irregularities. When installing in the ground, get into a prone position to listen for possible release of striker.

(14) If no clicking is heard when the thin gage wire is removed, pull out the heavy gage wire from the interceptor hole. It should come out easily. Note the order of withdrawal of the safety wires; first the thin wire from the safety pin hole and then the thicker wire from the interceptor hole.

e. Neutralizing.

(1) *Disarming* is attained by inserting a heavy gage wire through the interceptor hole.

(2) *Defuzing* is accomplished by holding the release plate down, removing the restraining load, bending safety wire to prevent dropping out, unscrewing firing device from charge, and unscrewing standard base from device for destruction or safe storage.

(3) Holding the release plate down, insert the safety pin into the safety pin hole and insert cotter pin to prevent the safety pin from slipping out.

f. Re-Use. So long as components remain serviceable, an M5 pressure-release firing device can be re-used. When percussion cap has been fired (for training purposes etc.), preparation of firing device for re-use involves the following procedure—

(1) Remove standard base, punch out fired percussion cap and press a No. 3 cap firmly into place.
(2) Holding firing device with release plate up, and hinge of release plate toward body, a nail held in right hand and perpendicular to long axis of device may be used to force striker back to cocked position.
(3) Close and hold down release plate, withdraw nail, and insert safety pin.
(4) With release plate held down firmly, withdraw safety pin to see that it slides out easily; replace safety pin and cotter pin.

g. Packaging. Four firing devices, complete with percussion caps in bases, and four small plywood boards are packed in paperboard boxes, with total weight of 15 ounces. Five of these containers come packaged in a fiberboard box and ten of the latter (200 devices) are shipped in a wooden box.

42. Firing Device, Pull-Friction Type, M2

a. Description. This is a small, black, plastic device, cylindrical in form, measuring 1⅝ inches in length and ½ inch in diameter. It is used as a triggering device for antipersonnel mines and boobytraps (figs. 46 and 47).

(1) This device does not use a standard base. Instead, a nonremovable base is employed in which is contained a pellet of friction compound similar to a match head. Passing through this compound is an abrasive coated wire that extends upward and is attached to a coil spring supported pull ring. The friction compound absorbs moisture when exposed. Moisture contaminates compound and causes misfires. Protection from moisture during both storage and use is of great importance with this firing device.
(2) An extension on the nonremovable base is provided for attachment of a suitable cap or detonating cord. Extension is protected by a removable cap.
(3) A safety pin, projecting through head of device, restrains movement of the coated wire. This is its only safety device.

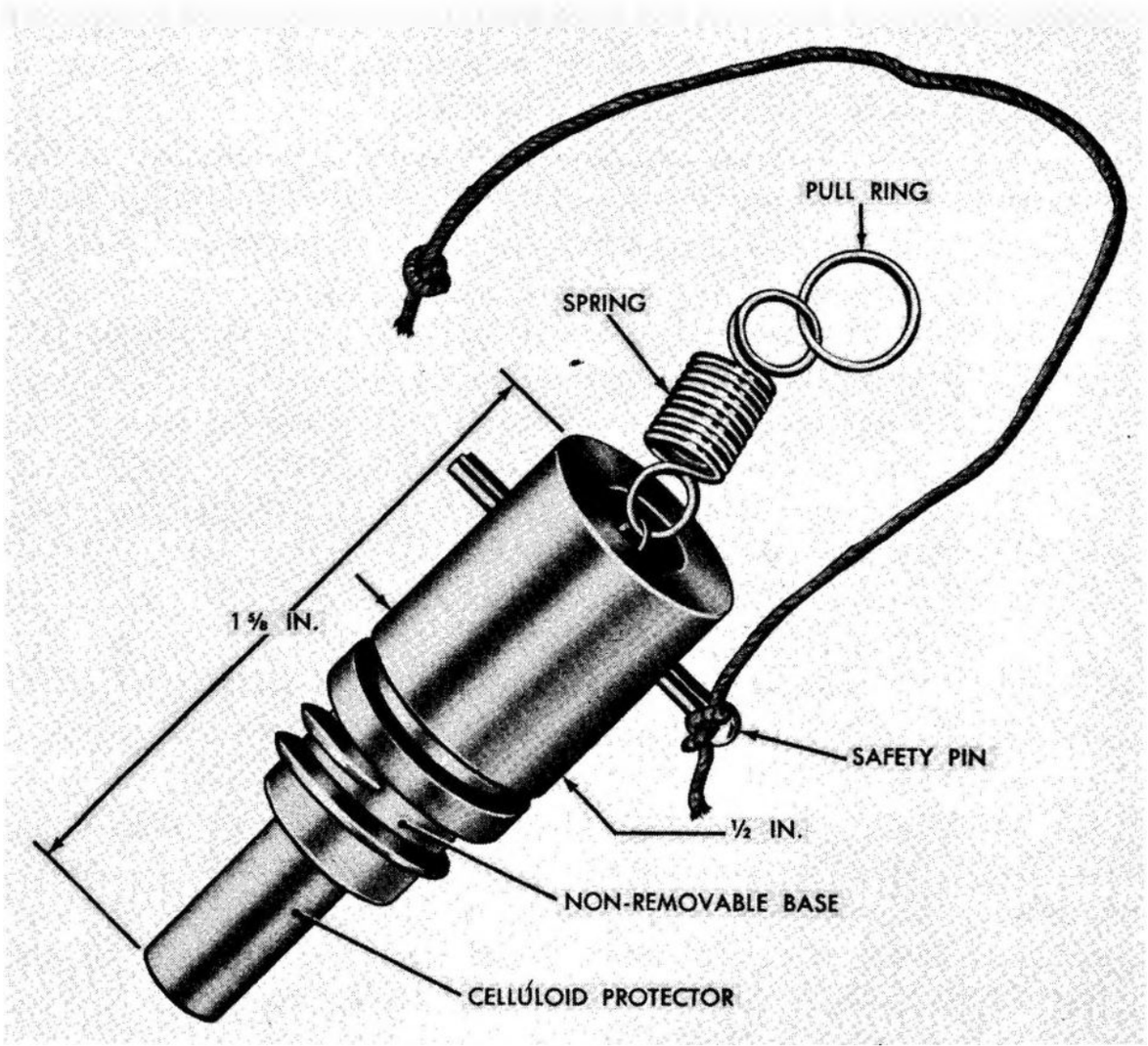


Figure 46. Firing device, pull-friction type, M2.

b. Functioning.

(1) When safety pin is removed a pull of 3 to 9 pounds stretches coil spring and snaps coated wire through friction compound.

(2) Friction compound ignites and shoots a flame out open end of base and fires nonelectric cap attached thereto.

c. Installing and Arming. Use of this device with a booby-trap is shown in figure 79. It is one of the easiest devices to install with a simple trap where a trip-wire is used. When so employed, the following installing steps are prescribed–

(1) Inspect safety pin for looseness. Remove protective cap from base and crimp on a U.S. nonelectric cap.

(2) Insert cap in charge or, if detonating cord is to be used, tape one end of cord to cap and run other end to charge.

(3) Anchor boobytrap or firing device to some support using a length of trip-wire.

(4) Install loose trip-wire laid in prolongation of long axis

of device, attaching anchor end first, and remove safety pin.

d. Neutralizing.

(1) Disarming is attained by inserting safety pin and disconnecting trip-wire.

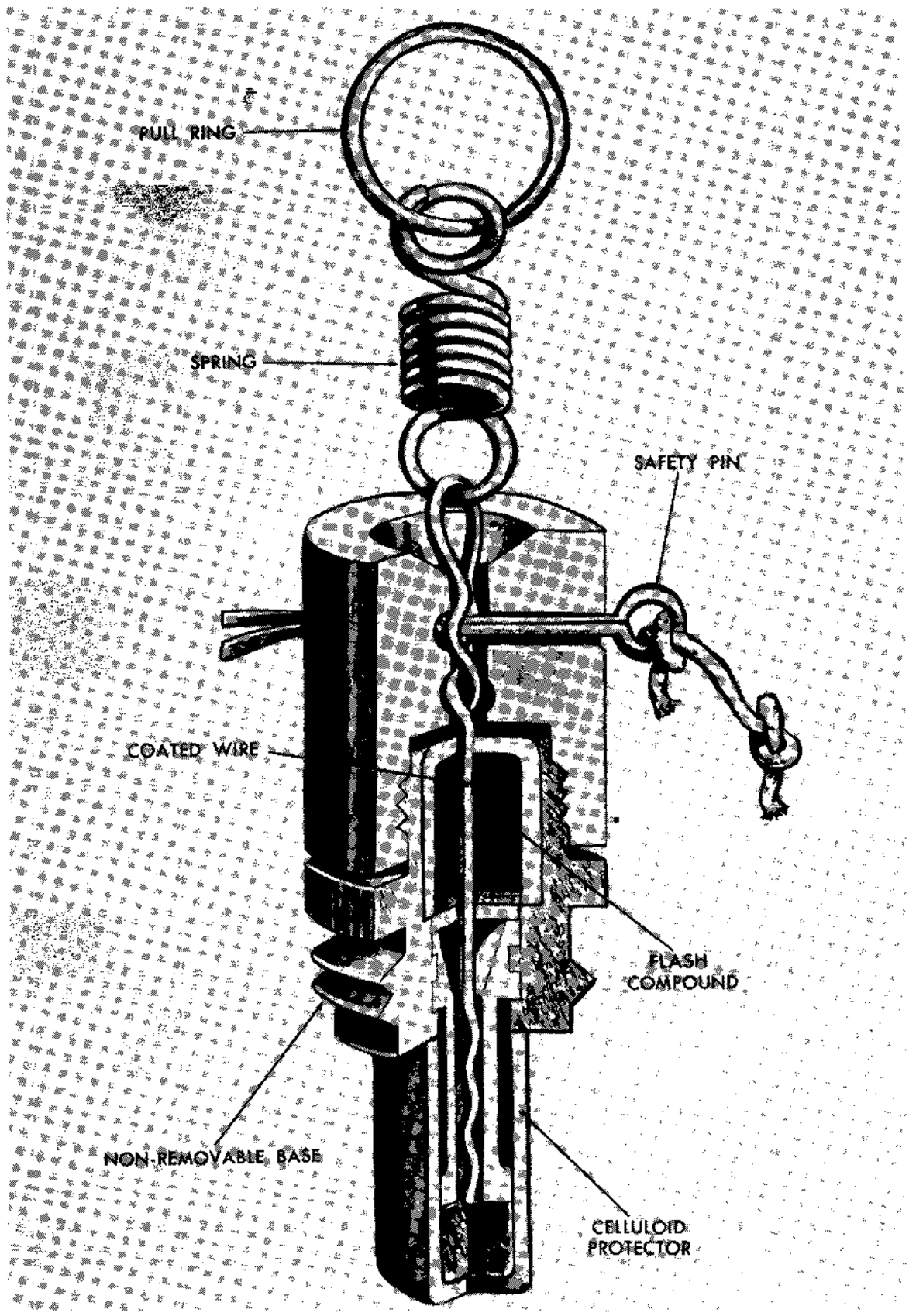


Figure 47. Cutaway view of firing device, pull-friction type, M2.

(2) Defuzing is accomplished by separating firing device from charge, and either destroying firing device or storing in a safe place. *Do not attempt to remove blasting cap from device.*

e. Packaging. Five devices and two 80-foot spools of trip-wire are packed in a cardboard box. Five boxes are packed in a wax-sealed carton. Six cartons (150 devices) are packed for shipment in a wooden box.

Section III. MISSILES

43. Hand Grenades

a. Description. Hand grenades can be classied into three general types, namely: fragmentation, offensive, and chemical (smoke and incendiaries, burning and bursting types) (fig. 48). The delay-action fuze normally fitted to explosive hand grenades and to bursting-type chemical grenades has a varying delay of from 3 to 6 seconds. Burning-type chemical hand grenades use a fuze with a delay of approximately 2 seconds.

b. Lethal Characteristics. A fragmentation grenade is preferred for antipersonnel effect, as fragments fly over 200 yards. The offensive grenade, while having an antipersonnel effect over a small area, is more useful as a demolition agent. It contains approximately ½ pound of TNT. Incendiary grenades such as thermate (TH) or white phosphorus (WP) can be used where incendiary action is required. Other chemical grenades (burning smokes, tear and vomiting gases) have little application for use as boobytraps because of limited casualty effect.

c. Application in Boobytraps. All three types of grenades have fuze wells that fit a standard firing-device base. When incendiary grenades are used, standard fuzes should be employed to obtain proper effects. Various colors of smoke may be used for signaling purposes and the WP grenade projects burning particles of phosphorous over a radius of about 15 yards. Figure 75 illustrates a fragmentation grenade being used as a boobytrap.

44. Mortar Ammunition

a. Description. A complete round of mortar ammunition consists of a fuzed projectile, a propelling charge comprised of a number of increments and an ignition cartridge, and a percussion primer. Mortar ammunition is provided with either high-explosive fillers that give fragmentation and blast effects (fig. 49), or chemical fillers that provide gas or smoke effects (fig. 50).

b. Sizes. Mortar ammunition is provided in three different

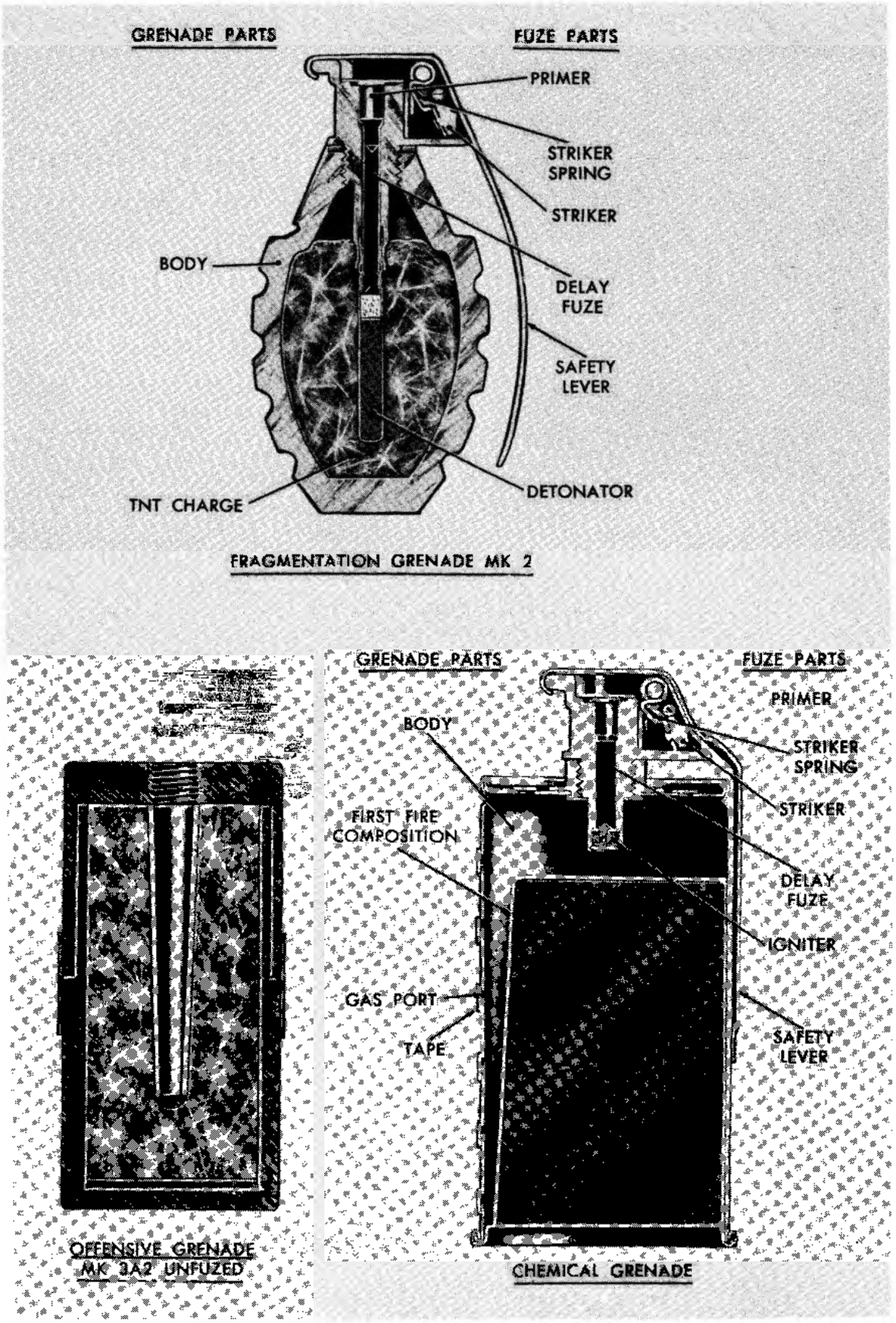


Figure 48. Hand grenades, cross section.

sizes. The 60-mm, HE, shell (fig. 49) weighs about 3 pounds and contains approximately 1 pound of TNT making it an effective charge for boobytraps used against personnel. The 81-mm, HE, shell (fig. 51) weighs about 11 pounds, contains ap-

proximately 4.3 pounds of high explosive and produces casualties up to 300 feet from burst. The 81-mm shell is also provided in a smaller size weighing about 7 pounds. The 4.2-inch mortar shell (fig. 52) weighs nearly 24 pounds and contains about 8.6 pounds of high explosive. When employing this round as a base charge in a boobytrap the use of a booster will provide more effective results.

c. Application in Boobytraps. Either high-explosives or smoke (WP) shells are suitable for use in boobytraps, the first being

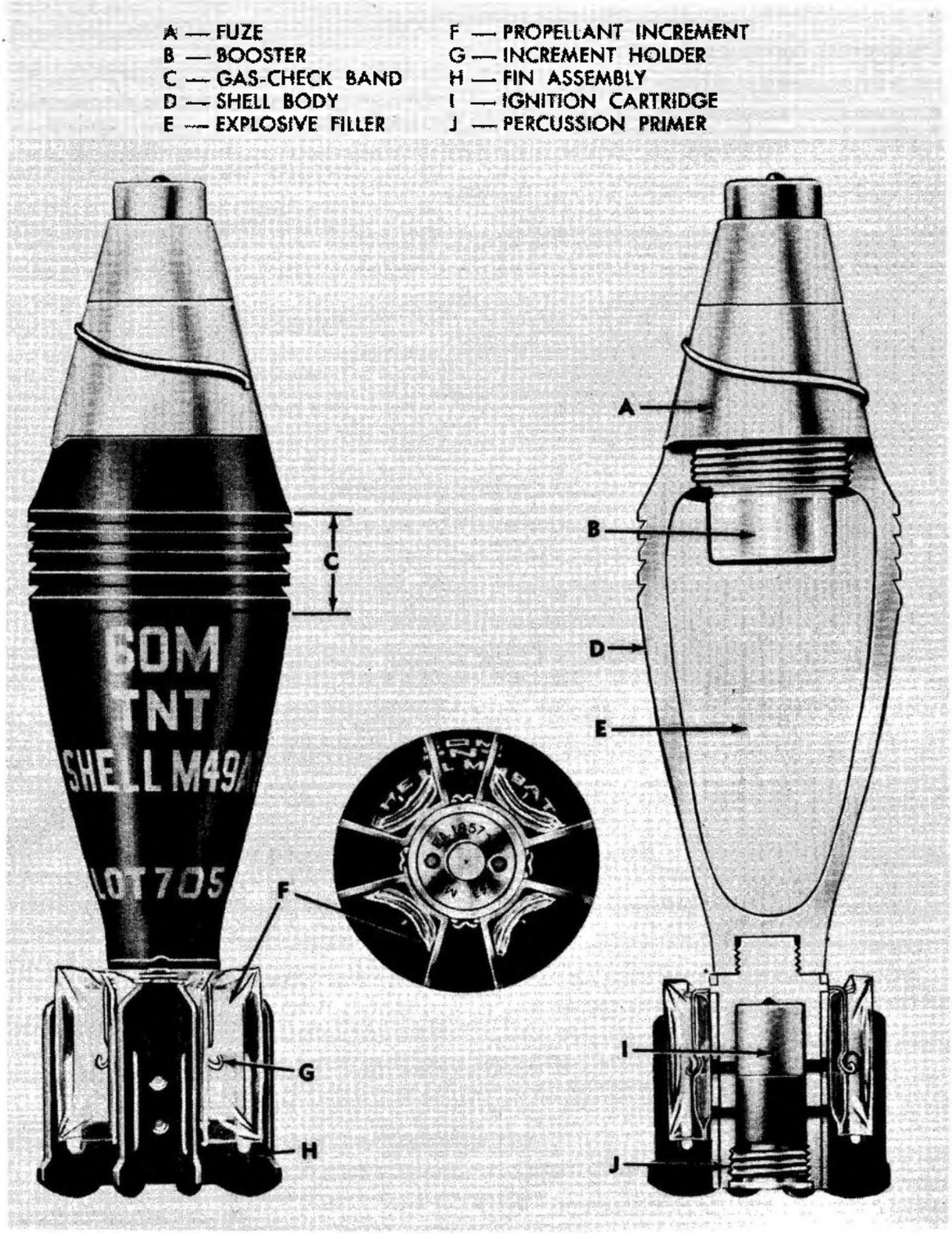


Figure 49. Shell, HE, for 60-mm mortars.

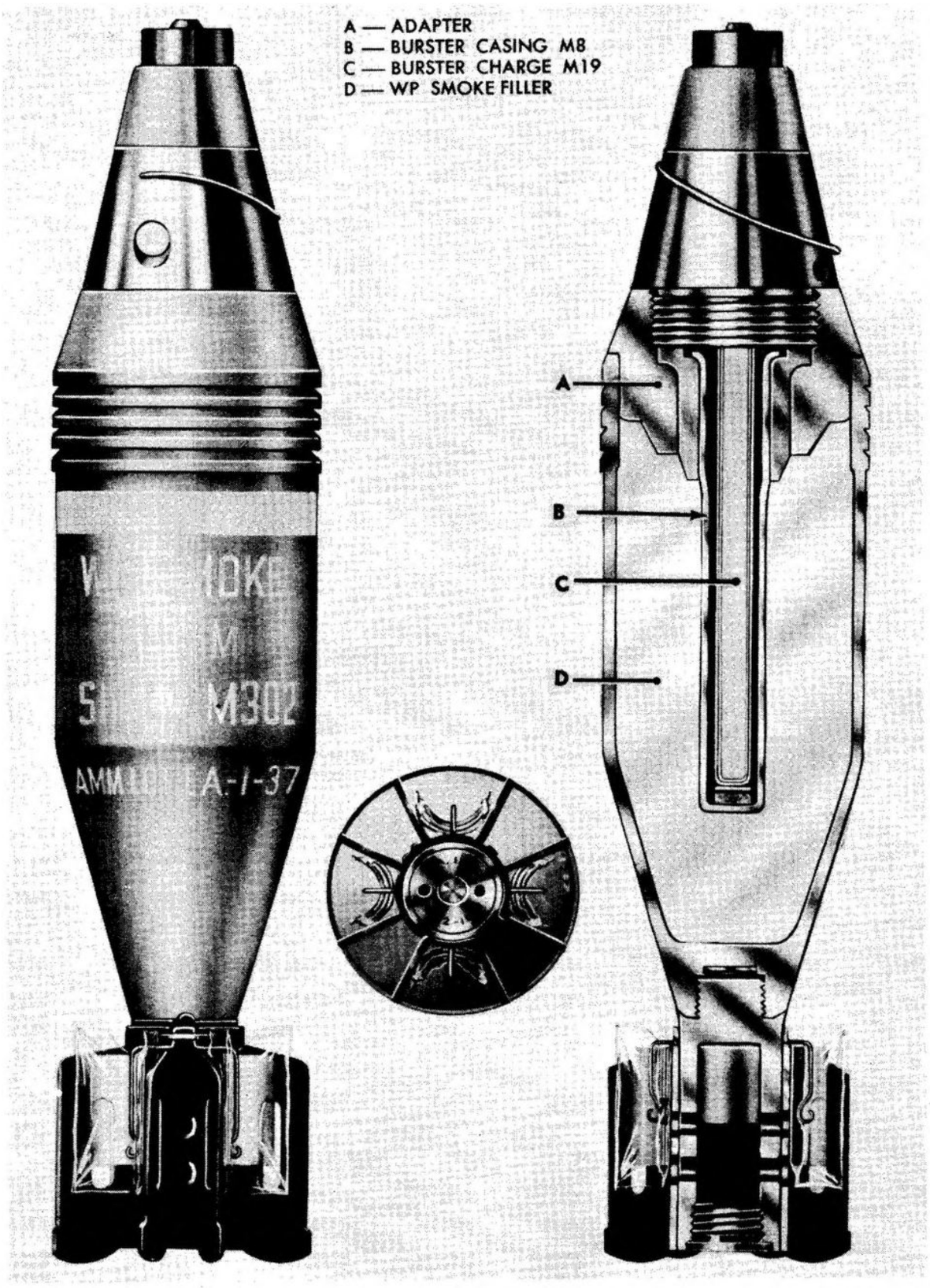


Figure 50. Shell, smoke, WP, for 60-mm mortars.

suitable for antipersonnel purposes and the second primarily for signaling, though antipersonnel characteristics may be expected. With all mortar ammunition, there are a number of components that may be discarded as unnecessary. The only portion of a mortar shell that is of value in a boobytrap is the container and its explosive filler. The mortar shell fuze must be

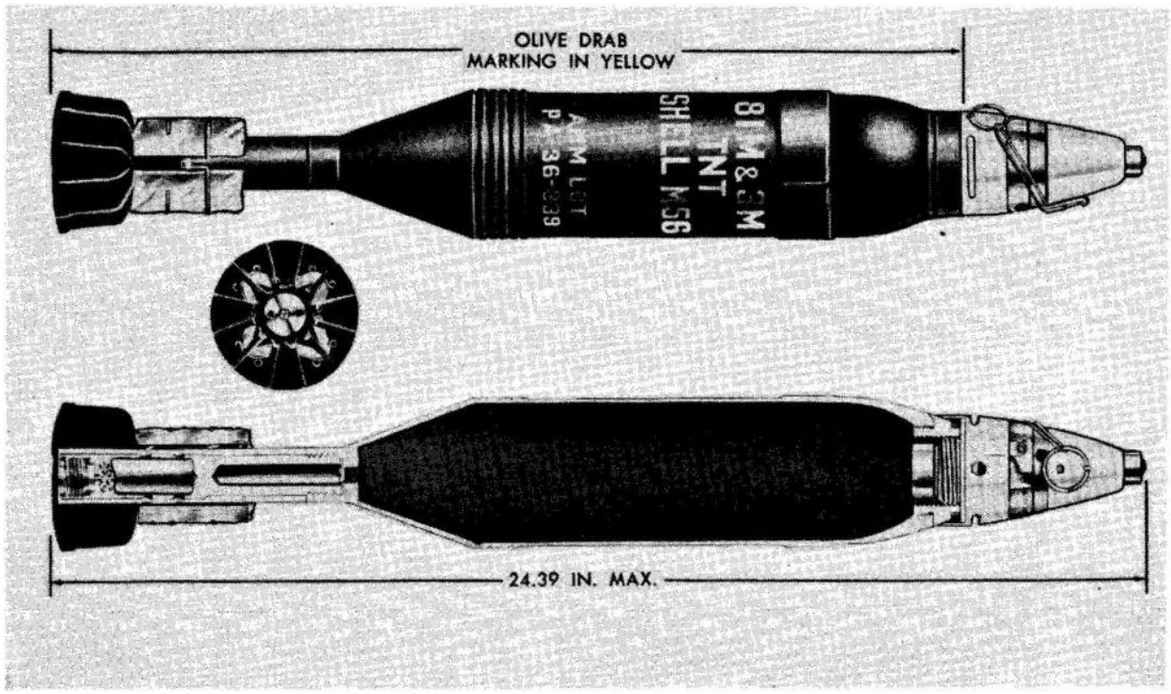


Figure 51. Shell, HE, for 81-mm mortars.

replaced by a firing device. The universal destructor M10 (fig. 23) is suitable for adapting a firing device to any standard fuze well. Figure 103 illustrates a boobytrap in which a 60-mm mortar shell is used as a base charge.

45. Artillery Ammunition

a. Description. A complete round of artillery ammunition comprises all components necessary to fire a weapon once and to cause a projectile to function at the desired time and place. These components are, in general, a projectile, fuze, propelling charge and primer. Dependent upon both type of propelling charge and method of loading into a weapon, complete rounds of artillery ammunition are known as fixed, semifixed, or separate-loading.

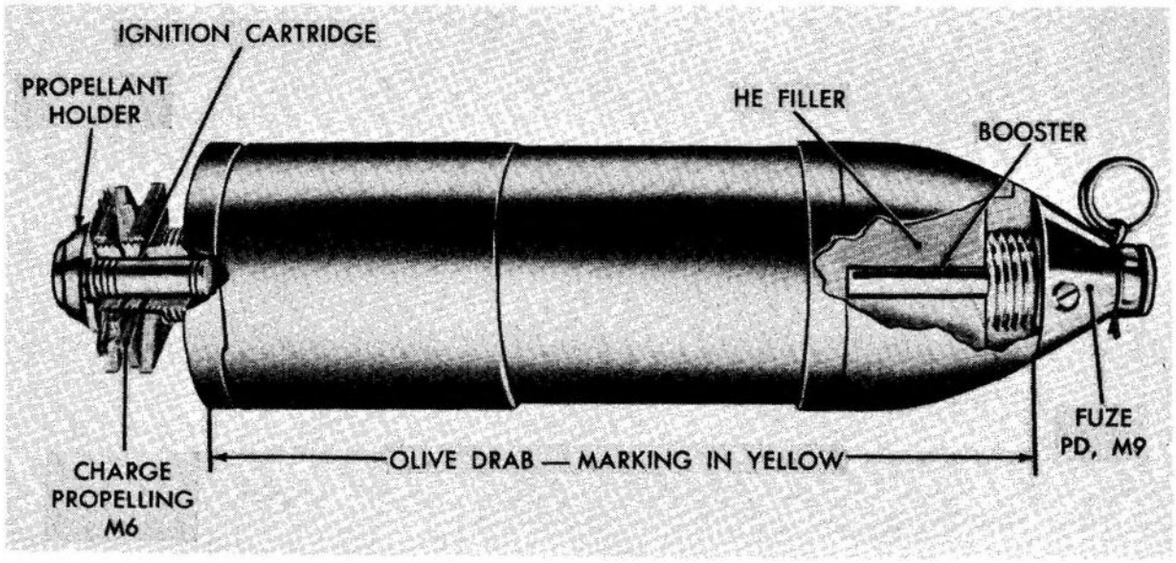


Figure 52. Shell, HE, for 4.2-inch mortars.

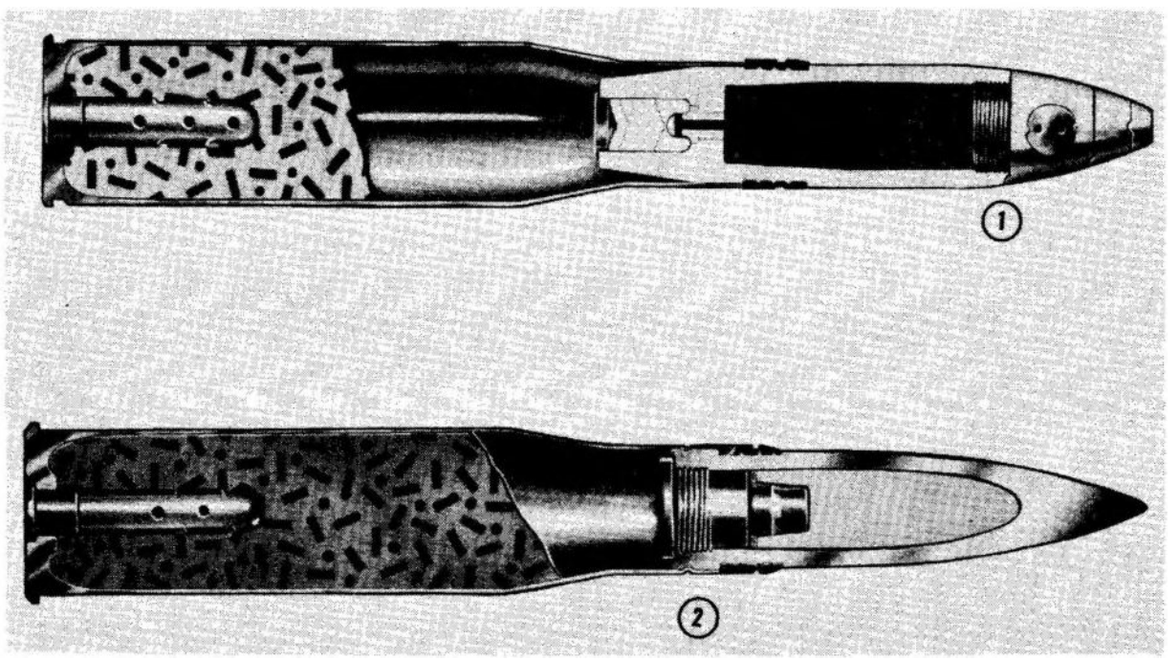
b. Useful Component. Artillery ammunition can be used in making boobytraps. The only component that is useful, however, is the projectile, which may be installed as a base charge. Projectiles are adaptable for employment with standard firing devices provided for use in boobytraps.

c. Armor-Piercing Projectile. Projectiles suitable for use in boobytraps are filled with either high explosives or war gases. Some projectiles, such as armor-piercing, depend upon high velocity of flight to give proper terminal ballistic effects. Such velocity is not obtainable in boobytraps.

d. Effectiveness. Effectiveness of conventional artillery projectiles used as base charges in boobytraps is obtained from the blast produced by the detonation, fragments of shell that are cast forth by the explosion, or the amount of war gases or WP scattered in the area.

e. Suitable Types of Shells. Shells suitable for use as boobytrap charges are primarily confined to the 75-mm, 90-mm, 105-mm, and 155-mm sizes, although larger sizes may be used where the target requires a heavier base charge. Shells may be equipped with either a base or nose fuze well, either of which is suitable for boobytrap adaptation (fig. 53). The universal destructor M10 (fig. 23) is a suitable coupling for joining a firing device to any standard fuze well.

f. Fixed Type Shells. Shells of the fixed type, such as shown in figure 53 must first be separated from their cartridge cases



1 Nose fuze installation
2 Base fuze installation

Figure 53. Typical shell cross sections showing nose and base fuze well installations.

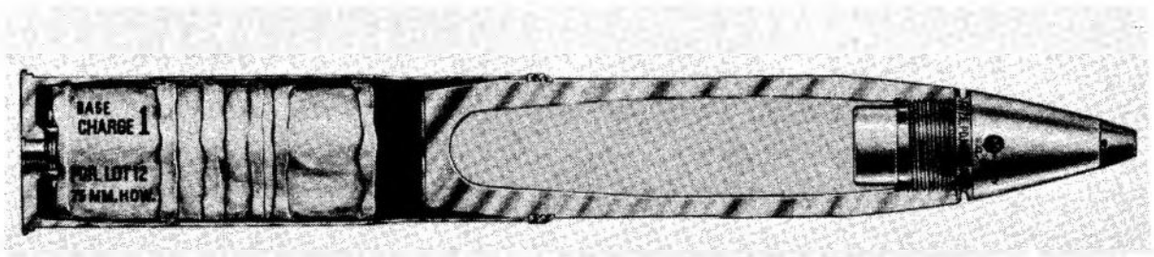


Figure 54. Shell, semifixed, 75-mm howitzer.

before boobytrap adaptation can be made. With semifixed ammunition (fig. 54) separation of a shell from its case is more readily achieved because the fit between shell and case is not so snug. Shells provided for separate-loading ammunition (fig. 55) are more readily adapted to boobytraps because they come separated from cases, have no attached fuzes, and come equipped with boosters.

g. Weights of High Explosives. Weights of high explosives in shell cavities are approximately as shown below. Further data on artillery ammunition is available in TM 9-1901.

75-mm — 1.54 pounds HE
90-mm — 2.04 pounds HE
105-mm — 4.84 pounds HE
155-mm — 15.1 pounds HE

h. Special Ammunition. Illustrated in cross section in figure 56 are three different types of shells. Means for boobytrap adaptations are obvious, the fuze wells being of standard sizes to receive an M10 universal destructor. Should a high-explosive antitank shell be used for the effect obtainable from a shaped charge, the projectile point must be quite close to the object to be destroyed, otherwise the explosive jet effect will be diminished.

i. Bombs. While not a type of artillery ammunition, bombs also are suitable for use as base charges of boobytraps. Their action in detonation is comparable to artillery shell of comparable size. Unfuzed bomb bodies are provided with various fillers including high explosives, incendiary mixtures, and war gases.

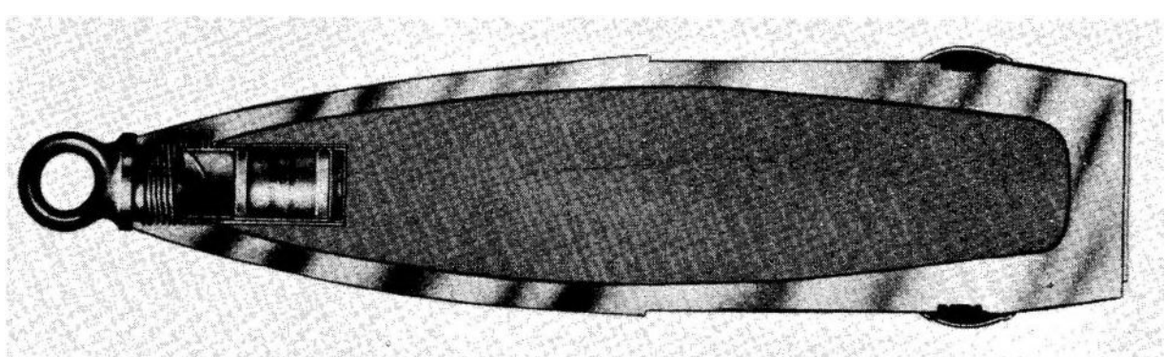


Figure 55. Shell, HE, for 155-mm howitzer.

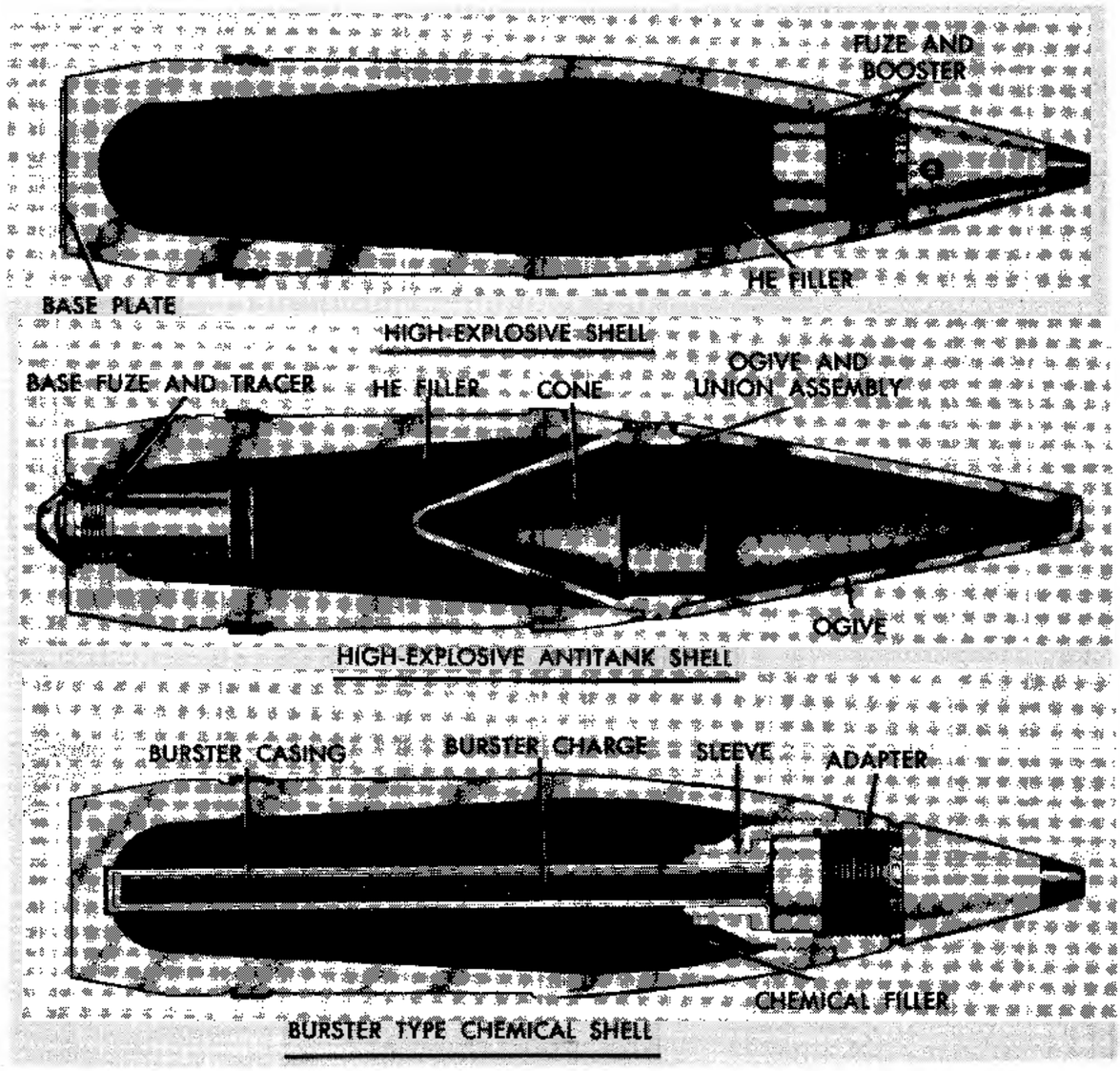


Figure 56. Typical high-explosive, high-explosive antitank, and chemical projectiles.

CHAPTER 6

CARE AND PRESERVATION

46. Special Precautions in Handling

a. Because of physical and chemical characteristics of explosives, all ammunition components containing an explosive compound must be handled with special care.

b. Hand carrying is the safest method for use in moving explosives. It is the jar resulting from a fall or the dropping of an item that presents real danger. Never tumble, drag, throw, or drop containers on each other or on a floor.

c. When repairing, opening, or closing containers filled with explosives, use tools made of nonferrous or nonsparking materials.

d. Never carry matches, lighters, or similar spark-producing devices in areas where explosives are being stored or handled.

e. Provide cool and sheltered storage facilities for fuzes, firing devices, primers and detonators as they are especially sensitive to heat and shock.

f. Safety pins, safety forks, and other safety devices are designed for the protection of personnel. Leave such devices in place until the last practical moment before leaving and then remove.

g. Crimping of priming caps to firing devices must be done carefully, using a standard cap crimper. Never attempt to remove a priming cap that has been crimped to another component.

h. Care will be exercised to see that fuze cavities to detonator wells are clear of obstructions and free of foreign materials before attempting to assemble a firing device or detonator.

i. Protect blasting caps, detonators, and fuzes or firing devices with detonator assembled from shock. heat, and friction. By *shock* is meant such effect as is received by detonators knocking together when carried loose in a pocket of boobytrap emplacement personnel, or when dropped from any height whatever. By *heat* is meant prolonged exposure to direct rays of the sun. By *friction* is meant any abnormal friction such as sliding across a table or being forced into a tight or obstructed well.

j. Explosives and ammunition will not be exposed unnecessarily to moisture, dampness, or direct rays of the sun for a long pe-

riod. Whenever it is necessary to leave such items in the open, cover with a tarpaulin so placed as to permit free circulation of air beneath.

k. Use waterproofing materials to protect explosive components of boobytraps whenever they are emplaced in wet surroundings. Grease, wax, cement, or sealing compound may be employed to advantage in sealing joints that admit moisture.

l. Unit storage areas, isolated from other installations, are best suited for explosives and ammunition. An area set aside exclusively for ammuntion storage and workshop facilities will simplify enforcement of proper safety measures.

m. Consult SR 385-310-1, TM 9-1900 and FM 5-25 for information on safe procedures and control of hazards.

47. Flammable Substances

a. Flammable materials are easily ignited and burn readily. The vapor of all flammable liquids will burn. Place all flammable substances in isolated storage and keep them away from all outside sources of heat.

b. Common examples of flammable materials that may be encountered while preparing boobytraps include all powders, explosive compounds, and many chemicals. With the exception of demolotion explosives, loose explosive materials, either solid or liquid, will rarely be handled. Should leaky containers of highly flammable substances be discovered, immersion in water is immediately indicated. Burns received from some flammable substances such as incendiary agents are always quite serious. First aid treatment is an immediate necessity for any burn of this nature.

48. Toxic Substances

Chemical agents used as fillers in various kinds of ammunition produce, by ordinary and direct chemical action, a toxic or an irritating (harassing) physiological effect, a screening smoke, an incendiary action, or any combination of these. Care must be exercised, therefore, in selecting chemical ammunition for boobytrap use to make certain no leaky containers are handled. Exposure to any chemical filler calls for immediate first aid treatment.

49. Storage

a. Store boobytrap explosive items in isolated buildings or abandoned pill boxes which have been designated for this purpose. When specially constructed magazines are not available, use buildings that provide good protection against moisture and

dampness, have adequate ventilation, and are located on well-drained ground. Prohibit heating with open fires or stoves.

b. Stack ammunition components in small piles and protect them from dampness and weather whenever they are stored in the open.

c. Keep boxes, cases, and other containers clean and dry in storage. Before storing, repair or replace damaged containers.

d. Keep magazines and storage areas clear of rubbish and flammable material such as oily rags, turpentine, and paints.

e. Store components by type in small piles, so arranged that individual containers are accessible for inspection and air can circulate freely. Use pallets or similar dunnage to keep all components at least 2 inches above floor or ground. Keep stacks low and quantities small.

f. Separate individual magazines or stacks of explosives stored in the open by distances adequate to prevent propagation of an explosion from one to another.

g. Forbid smoking, carrying of matches, and the using of lights with an open flame in magazines or around explosive storage areas.

h. Neutralize all explosive items before their return to storage.

i. Return all broken firing devices for salvage.

j. Keep highly sensitive items such as fuzes, boosters, and firing devices stored separately from main charges, such as demolition blocks, mines, shells, bombs, and similar items. Never take them into buildings or quarters where personnel are living.

k. Store captured enemy ammunition in an area exclusively set aside for such purpose. Locate such area no closer than ¼ mile from the nearest American dump.

l. Use TM 9-1900 and FM 5-25 as references on storage matters.

50. Transportation of Explosives

a. While the loads of ammunition normally transported by a boobytrap team will be small, the same dangers exist that are found in a large load, especially since types of ammunition components carried will contain a large percentage of highly sensitive explosives. Knowledge of safe practices in transporting ammunition items is therefore important. See SR 385-310-1, TM 9-1900, and FM 5-25 for further information on transportation.

b. A member of a boobytrap team will carry on his person a large percentage of the material he uses in constructing boobytraps. Protection from shock necessitates proper packaging where several items are packed together. Leave items in original containers and either tape or bind them together when necessary to avoid bumping while being carried in a pocket, a haversack, or similar container.

c. Whenever assembled boobytraps are to be carried, special precautions are necessary. Secure all safety devices in a positive manner so they cannot fall out or be jolted from position. Bind or tape items when necessary to prevent their bumping with each other. Pack them into a close compact bundle for safe and easy handling.

d. Safe means for transporting larger loads are obtained by using a cargo vehicle and bracing a load to protect it from road shocks as much as possible (fig. 57). Whether loaded on a truck, railway car, or ox cart, ammunition containers should be securely braced to protect their contents from road shocks.

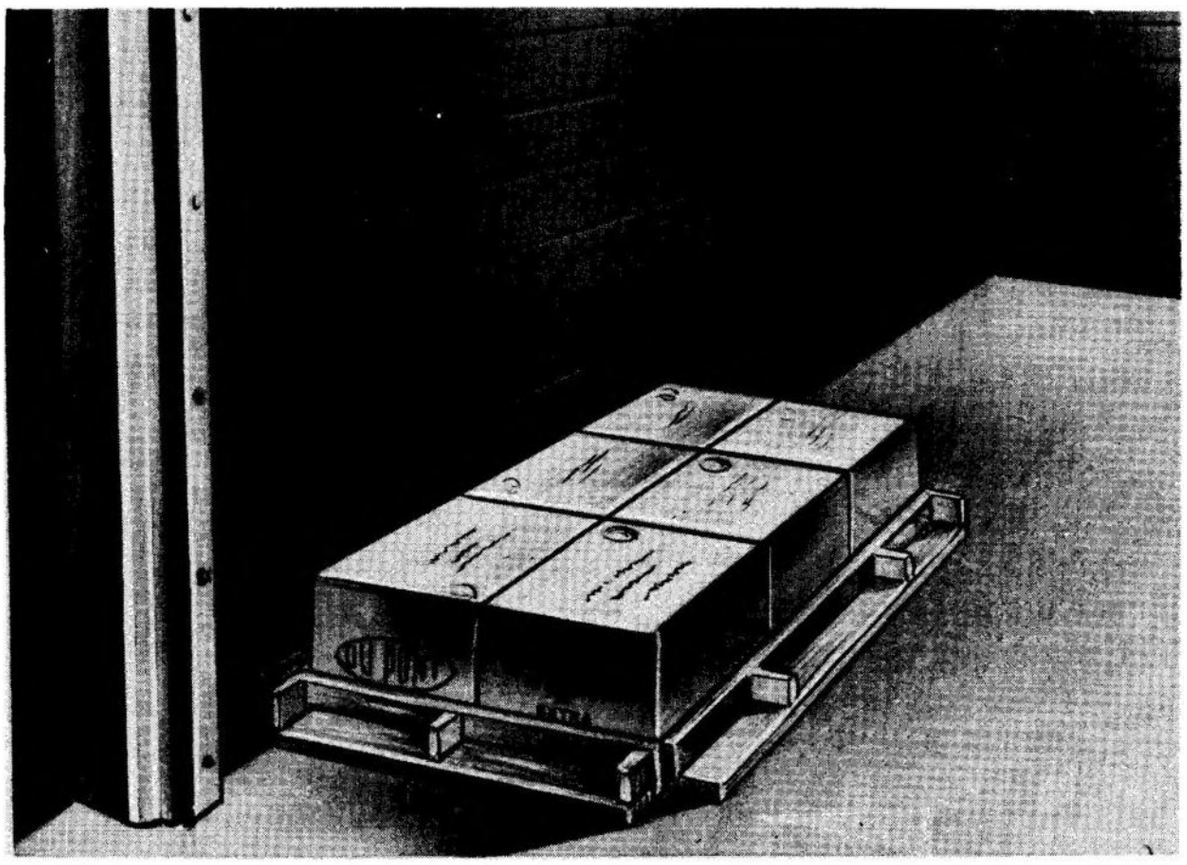


Figure 57. Boxes braced to prevent shifting.

51. Accidents

Reports to higher authority are made of all accidents where malfunctions of ammunition are involved. Subsequent investigation may reveal deterioration necessitating army-wide condemnation of items involved. Prompt reporting may save others from similar accidents. Compliance with methods and practices prescribed in SR 385-310-1, TM 9-1900, and FM 5-25 will curtail accidents.

CHAPTER 7

BATTLEFRONT EMPLOYMENT

Section II. PLANNING

52. Aim

a. Ingenious use of local resources, coupled with varied applications of standard items of military issue, are necessary in making successful boobytraps. They must be simple to make, readily disguised, and deadly in operation. Examples contained herein illustrate a wide assortment of applications. Intended to stimulate the imagination, specimens shown should be used only when time does not permit of more original ideas.

b. While boobytraps are employed to inflict casualties and destroy property, their greatest value lies in the reduction of morale and mobility among enemy forces. The aim for which boobytraps are used is to create an attitude of uncertainty and suspicion in the mind of an enemy.

c. Conceived in sly cunning and built in various forms, boobytraps must be installed so as to produce unexpected results. Aim to surprise an enemy, frustrate his plans, and fill the minds of his soldiers with fear of the unkown.

53. Use

a. It may be expected that boobytraps will be employed in any future war by all participants, as evidenced by frequent use of boobytraps in Korea. An enemy may be expected to study habits of American soldiers to determine more effective methods of boobytrap employment. International law may be disregarded by an enemy and traps may be placed upon human bodies, wounded or dead; dogs and other animals may carry traps; in fact, enemy boobytraps may be expected under any and all circumstances.

b. During a withdrawal, boobytraps may be used in much the same way nuisance mines are employed. Buildings and other forms of shelter, roads, paths, diversions around obstacles, roadblocks, bridges, fords, and similar areas are all potential hiding places for well concealed boobytraps.

c. In defense, boobytraps should be located on the path of an enemy at strategic locations and in sufficient numbers to impede his progress, prevent detailed reconnaissance, and delay effective neutralization. Boobytraps may also be used to trip flares which provide warning of an enemy's advance during hours of darkness.

54. Principles

Observation of certain basic principles is essential to successful employment of boobytraps. These principles are as old as warfare itself and an enemy will arrange the placing of his traps with the same basic cunning as that employed by allied forces. Knowledge of these principles will not only assist a soldier in placing boobytraps expertly, but will help him to avoid enemy traps.

a. Outward Appearance. Surroundings should appear undisturbed. Before leaving a boobytrapped area, removal of all signs of trespass must be thorough.

b. Constricted Areas. Boobytraps placed in a defile or similarly constricted area increase the probability of effective results.

c. Concentration of Traps. In like manner, a great number of traps in an area increases the chances of some being sprung.

d. Obstacles. Wherever an inconvenience appears in the path of an enemy, such as a road block, fallen trees, litter, and the like, an ideal spot is provided for a boobytrap to delay, if not to kill, a hurried soldier.

e. Normal Operation. In many gathering places, such as in buildings, at entrance ways, at wells, and similar places, traps can be devised to function as a result of some normal or instinctive movement on the part of a passing soldier.

f. Curiosity. Curiosity has killed many persons. Traps placed in bold positions to dare the curious, or attached to souvenirs, weapons, flashlights, food containers, and the like, oftentimes get results.

g. Firing. Two or more alternate methods for firing a trap may be employed. An obvious method may be used to detract attention from another carefully concealed method.

h. Bluff. Dummy boobytraps can be very effective. Repetition of many may produce carelessness. An obvious trap may be employed to mask another and perhaps more deadly trap.

i. Lures. Any situation that excites a soldier and draws him closer is a desirable bait for a boobytrap. In like manner, an unexpected detonation of a delay action incendiary trap may scatter moving troops or cause a detour into a more heavily trapped area.

j. Variety. Variety is essential. Mix up the devices used, not only firing devices but main charges as well. Keep an enemy guessing. Remember all men are curious, and soldiers of "have not" nations have a burning desire for many things that are abundant in the United States.

55. Charges

a. Preparation. Small, compact traps are best suited for installation during raids in enemy-held territory. Each member of a team must carry his supplies and be capable of independent operation. Traps should be assembled complete, except the attachment of a firing device, before entering enemy territory, so that work required on a site involves only joining of firing device and charge, planting of trap, arrangement of trap-wires, and withdrawal of safety devices.

b. Location. Place charges where greatest damage may result. A charge placed against a stone wall will detonate in magnified intensity away from the wall. In like manner, force of an explosion on the ground will affect surrounding air more when a hard surface under the charge deflects the explosive wave upward. A charge detonating from 6 to 10 feet above ground will cause damage in a much larger area than a trap resting on or below the surface of the ground.

c. Characteristics. Large numbers of cheap boobytraps, simple to make and easy to place, will cause more delay and confusion than a small number of intricate and expensive devices. Complicated mechanisms are costly to produce, require more careful techniques in planting, and offer little advantage over a small 2-pound TNT block charge.

56. Reconnaissance

a. Intelligent planning is necessary to obtain effective utilization of boobytraps. Excepting emergencies, when time permits hurried operation only, plans will be developed and a program prepared before starting the boobytrapping of occupied areas.

b. Complete reconnaissance of an area, in accordance with directions given in FM 5-6, is essential to good planning. Personnel of boobytrap teams are best suited to survey a combat area and determine its boobytrapping possibilities.

57. Plan of Operation

a. The commander with authority to employ boobytraps (par. 10) coordinates his plans with other tactical plans. Timing of boobytrap operations with movement plans is extremely essential. Traps should not be installed where friendly troops will remain

in an area for any appreciable length of time. Plans will state what is to be done, where, and when; and also designate the troops to be employed. Normally, only trained engineer or pioneer infantry troops are assigned such tasks.

b. Influenced by character of the terrain, the time, personnel, and materials available, a plan will authorize use of boobytraps in certain areas, with an indication of types and densities required. Authority for completion of detailed plans will be delegated to the commander responsible for installing. Materials may be obtained from unit supply stocks based upon proposed action.

c. Complete co-ordination between a commander of troops in an area and the officer designated to supervise boobytrap activities is most essential. Time of installation should be arranged so that evacuation of an area follows immediately upon completion of a boobytrap job.

d. The commander of the unit installing the boobytraps will prepare a detailed plan. This plan will include a site plan on which is indicated the location, number, type, and setting of individual traps. Personnel of boobytrap teams will be assigned specific areas and to specified boobytraps. Arrangements for supplies and transportation will also be covered in a detailed plan, and a location designated where all preliminary work on boobytraps will be completed. Time tables will be established to insure completion of activities to comply with withdrawal phases of tactical plans. Naturally, when there is ample time for reconnaissance, planning, and emplacement, there will be better traps.

e. In a hasty withdrawal, where time does not permit proper planning, each boobytrap team may be given a stock of mechanisms with instructions to make the best possible use of them in the time available. Training for such emergency action will make boobytrap teams adept in independent resourcefulness.

f. Plans for boobytrap projects must give proper consideration to all known characteristics of an enemy. Personnel of boobytrap teams must study the personal habits of enemy soldiers and remain constantly alert for new methods to surprise him. Repetition of methods will soon reveal a pattern that an alert enemy can detect.

g. Withdrawal operations furnish the most desirable conditions for boobytrap operations. When an enemy meets a boobytrap at the first obstacle encountered, his progress throughout an area will be delayed though no other traps are laid. A few deadly traps and many dummy traps, discarded indiscriminately, can cause great caution. This method makes the best of a hurried

situation. When mechanisms are discarded, they should represent unserviceable parts or items that have been rendered useless. Never throw away explosive items that may return to plague friendly forces.

Section II. INSTALLATION

58. Responsibilities

a. A commander authorized to employ boobytraps is responsible for all boobytraps placed within his zone of command. He will maintain adequate records to show the type, number, and location of such devices planted by friendly forces. He will prepare information obtained regarding boobytrap emplacements or practices used by an enemy.

b. Management of boobytrap services may be delegated to the engineer staff officer, who is assisted by engineer personnel assigned to his staff and by engineer unit commanders.

c. All unit commanders are responsible for maintaining knowledge of boobytraps in areas assigned their command, and in keeping subordinate personnel advised of these conditions. All subordinate commanders are responsible also for reporting to higher headquarters all new information collected regarding the use of boobytraps by an enemy.

d. An officer charged with responsibility for boobytrap installations will prepare necessary plans, superintend preliminary preparations, and direct emplacement of all boobytraps and similar devices. He will report to proper authority a detailed account of the results of his efforts, and will advise all concerned when changes are made. He will keep engineer intelligence units advised of the discovery of any new devices or low-cunning practices of enemy origin.

e. Engineer and pioneer infantry units, having had special training, are responsible for installing and neutralizing boobytraps. Recognizing the fact that adequate numbers of trained personnel may not always be available, all troops are given training to provide familiarity with boobytraps. All soldiers in a combat area should have ability to both install and neutralize simple boobytrap mechanisms.

59. Procedures for Installation

a. Installing boobytraps is a potentially dangerous business. Like all activities involving items that explode, such work is dangerous only because of the mistakes men make. Complete information is known about the physical and chemical characteristics of compounds used and there are no secrets in boobytrap

mechanisms. No great strength or unusual ability is needed to perform all required acts. Competence in setting boobytraps involves nothing more than learning proper techniques and how to apply them. Safety is attained by explicity following prescribed methods while perfection is acquired by experience and repetition.

b. Before attempting to build a boobytrap, inspect all components for serviceability. Search carefully to make sure that all components are complete and in proper working order. Check safety mechanisms and inspect triggering devices to insure proper spring action when released. Watch for rust or dents that might interfere with mechanical action of a component.

c. Follow the prescribed plan for setting boobytraps in the area involved. When one has not been made, a plan must be prepared upon arrival at a site. Advance planning makes possible the selection of proper times for use so that the load carried into an area will be limited to required items only.

d. A centrally located control point will be established in each boobytrap area, where supplies may be unloaded and from which directions may be given. Where numerous traps are concentrated, mark clear passage routes from control point to each trap. Lines or tape may be useful where vegetation is heavy.

e. Several teams may operate from one control point. Assign each team (rarely will it exceed 2 men) to a specific area and issue supplies only as needed to install traps of the types specified in the plan. A detail commander must make certain that every man knows his job and is competent to do it. He will keep his teams separated so that no team will suffer from the mistake of another.

f. Each team must have one person designated as leader who will direct all work. When possible, members of a team will avoid being close together when a trap is being assembled. Best results are attained when one member of a team does all technical work, the second being a helper to carry supplies, provide required assistance, and learn the trade.

g. When traps are installed during raids into enemy held territory, they should be small, simple in operation, and easily installed. Each member of a party may carry a supply for use as he sees fit. Employment of boobytraps under these conditions, when accurate records are impossible, may bring retaliatory results should later raids by friendly forces into the same area become necessary.

h. When a boobytrap is installed, the following procedure is prescribed—

(1) Select a site for the charge that will produce the greatest possible damage when trap is sprung.
(2) Lay the charge, protect it, and conceal it.
(3) Follow installation directions for various components as prescribed in chapter 5 of this manual, bearing in mind that danger of premature firing is kept to a minimum when firing devices and charges are kept separated until they are ready to be placed in an offensive position.
(4) Anchor boobytrap securely. Trip-wire will be found suitable material for this purpose.
(5) Camouflage the site.
(6) Remove all safety devices. Under some conditions removal of safety devices on all traps in an area may wisely be held in abeyance until all traps have been laid.
(7) Leave an area clean. Carry away all items that might betray the work that has been done. Loose dirt, empty boxes, tape, footprints, broken vegetation, and similar things are all telltale clues.

60. Reporting, Recording, and Marking

a. Boobytraps are reported and recorded in order to keep tactical commanders informed as to boobytrapped areas, and to keep friendly troops from becoming casualties. Boobytrap installations are reported and recorded as nuisance minefields, whether the area contains both boobytraps and mines, or boobytraps alone.

(1) A minefield *report* is any message, oral or written, or other communication, concerning either friendly or enemy mining activities.
(2) A minefield *record* is a completed form showing minefield features.

b. The following informal reports are made on *every* minefield laid by friendly troops:

(1) *A report of intent,* transmitted by the fastest available means consistent with signal security. This report must contain the location of the proposed field, the number and type of mines to be laid, the estimated time of starting and completing, and the tactical purpose of the field. The report is initiated by the commander authorized to employ the minefield, to his superior headquarters.
(2) *A report of initiation of laying,* transmitted by the fastest means available consistent with signal security. This report includes the location and extent of the field, total number of mines to be laid, and estimated time of

completion. The commander of the unit actually installing the minefield sends the report to the headquarters that directed him to lay it.

(3) *A report of completion,* also transmitted by the fastest possible means. It will contain the number and types of mines laid, location and extent of the minefield, and the time of completion. This report is forwarded to army level. When boobytraps are employed, either alone or in conjunction with mines, the report of intent and report of initiation of laying of the nuisance minefield will include the estimated number of boobytraps to be placed, and the report of completion will include the number of boobytraps placed.

c. Boobytraps are recorded as nuisance minefields on the standard minefield record form.

(1) When boobytraps are installed in an area other than in a minefield containing mines, the area is recorded as a nuisance minefield as shown in figure 58. The general locations are shown on the sketch portion of the form, using the appropriate symbol for boobytrapped areas. The areas or buildings containing boobytraps are lettered serially on the sketch. The number, types, locations, and methods of operation of the boobytraps are entered in the NOTES section of the form. If necessary, because of lack of space on the form, additional sheets may be attached. If short descriptive sentences cannot adequately describe the boobytrap, a sketch of minimum details will be included. The record form is prepared simultaneously with the placing of the boobytraps and is forwarded without delay up the chain of command to army level. At company or higher level, manual copying may be done for local temporary use, as required. Copies of photographic accuracy are made at the lowest headquarters equipped to perform this reproduction, and distribution is made downwards, laterally, and upwards in compliance with local policy. The standard minefield record form should be used for the preparation of the original record, but the compilation and submission of the data required on the form is mandatory even in the absence of the standard form.

(2) When boobytraps are installed within a nuisance minefield containing mines, the nuisance minefield is recorded as prescribed in FM 20–32, and the information on boobytraps in the minefield is included on the same form.

SECRET (Not Classified Unless Data Entered)

MINEFIELD RECORD (FM 20-32)

LAYING UNIT: CO. A 15TH ENGR. COMBAT BN

OFFICER IN CHARGE (Name, grade and service number): JOHN R. TAYLOR 1ST LT. 07/189

COMPLETION — TIME: 1800 DATE: 30 JUNE 53

SHEET 1 OF 1 SHEETS

MINEFIELD NUMBER: 15-A-42

LOCATION

NUMBER	COORDINATES	DESCRIPTION
1		
2		
3		
4		

INTERMEDIATE MARKERS

NUMBER	DESCRIPTION
1	
2	
3	
4	

DESCRIPTION OF BOUNDARY FENCE

NUMBER OF STRIPS | DESCRIPTION OF STRIP MARKERS

MAP SHEET (Name): SEXTON

SHEET NUMBER: 3578 I | SCALE: 1" = 50 PACES

RECORDER: Robert W. White Sgt.

LANES

NUMBER	GENERAL INFORMATION: WIDTH	GENERAL INFORMATION: ROW MARKED	MINES (If laid): TYPE NUMBER	TYPE NUMBER	TYPE NUMBER
1					
2					
3					

ANTI-TANK MINES

STRIP	TYPE NUMBER	TYPE NUMBER	TYPE NUMBER	TYPE NUMBER	TOTAL ANTI-TANK MINES NUMBER	BOOBY TRAPPED NUMBER
TOTAL (Lane Total)						
ICE						
A						
B						
C						
D						
E						
F						

LAID ☐ BY HAND ☐ MECHANICALLY

ANTIPERSONNEL MINES

STRIP	TYPE NUMBER	TYPE NUMBER	TYPE NUMBER	TYPE NUMBER	TOTAL ANTI-PERSONNEL MINES NUMBER
TOTAL (Lane Total)					
ICE					
A					
B					
C					
D					
E					
F					

LAID ☐ BY HAND ☐ MECHANICALLY

NOTES

RECORD OF BOOBYTRAPS PLACED

SCHOOL "A" 3 TRAPS PLACED

1. Pressure-release device and TNT placed under front door sill. Operated by opening door.

2. Pressure device and TNT placed under second step of staircase from ground to first floor. Operated by pressure

3. TNT under center of lobby floor. Connected to light circuit. Operated by turning on switch at entrance.

CITY HALL "B" 2 TRAPS PLACED

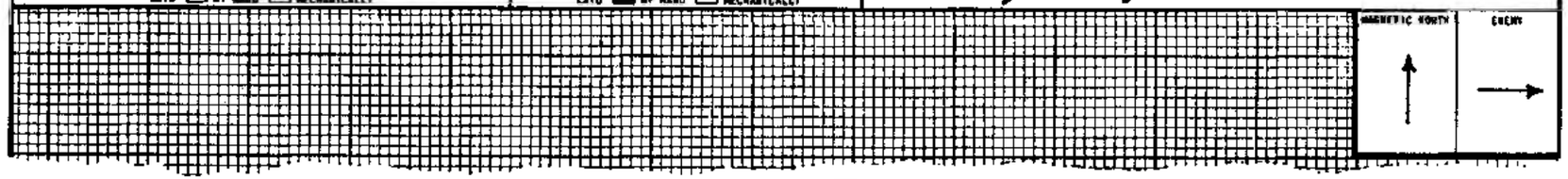
1. Pressure-release device and TNT in green footlocker in basement. Operated by lifting lid of footlocker.

2. Pressure device and TNT under loose floorboard just inside main entrance door. Operated by pressure on floorboard.

ALL TEMPORARY MARKERS REMOVED AT 30/1800

SIGNATURE AND GRADE: John R. Taylor 1st Lt.

MAGNETIC NORTH | ENEMY



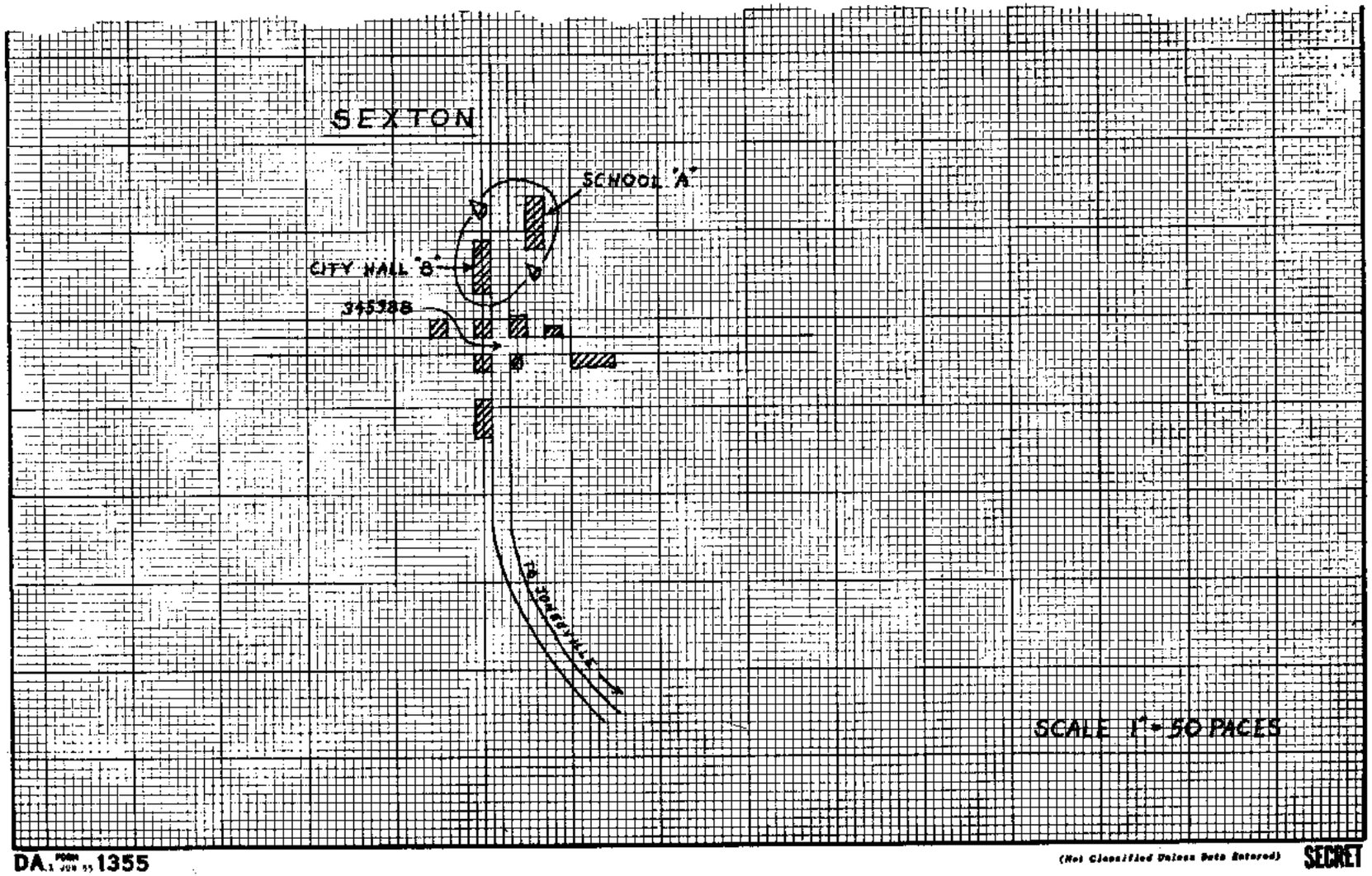


Figure 58. Method of recording boobytraps.

When it is not possible to accurately record specific locations of boobytraps or manufactured devices (e.g. scattered laying in open areas) the total number and types of these items in each minefield are recorded in the NOTES section of the form.

d. Triangular boobytrap-marking signs (fig. 59) are available for use in warning of the presence of boobytraps. They will be used by all troops to identify U.S. traps during a period preceding a withdrawal from an area, or to warn friendly forces of the presence of active enemy-installed boobytraps. When standard signs are not available use hand made signs. Boobytrap signs are painted red on both sides. On the side facing away from the danger area a 3-inch diameter white disc is centered in the triangle and the word BOOBYTRAPS is painted in white across the top only. Signs may be made of metal, wood, plastic, or similar material. Signs will be placed above ground, right angled apex downwards, on wire fences, trees, or rocks, or by inserting the apex in the ground. Latter method is used only when other methods cannot be adopted, as such warnings may become obscured by brush, undergrowth, or by being knocked down.

Section III. DETECTION AND REMOVAL

61. Clearing Personnel

a. Although responsibility for detection and clearance of boobytraps is assigned to engineer and pioneer infantry units, all military organizations assigned combat zone activities are re-

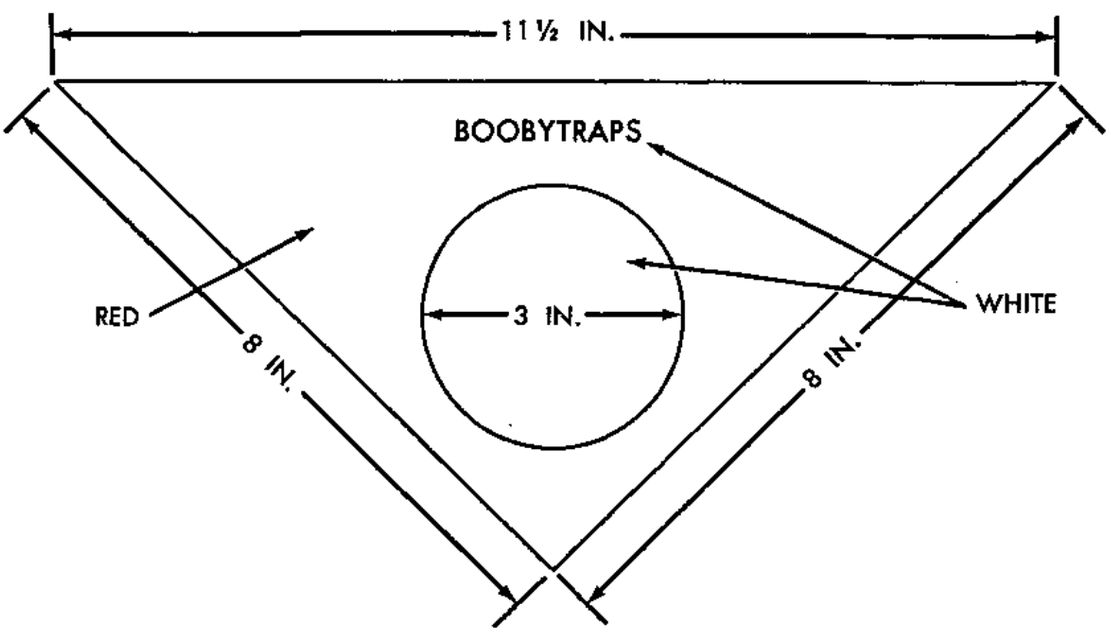


Figure 59. Triangular boobytrap-marking sign.

quired to maintain personnel trained to assist in clearing boobytraps from their route of movement.

b. Whenever possible, trained personnel from engineer, pioneer infantry, or explosive ordnance disposal units will, in preparation for an attack, search out and neutralize all boobytraps in front of friendly troops or prepare safe passage lanes. In an attack, however, all combat units must accept risk of boobytraps in order to maintain forward momentum of the assault. Discovery of boobytraps will be accompanied by immediate neutralization or placement of warning signs. Simple boobytraps only will be neutralized during an attack. Complicated traps will be identified by markers and reported for removal by trained boobytrap-disposal teams.

c. Bypassing of areas infested by boobytraps accelerates an attack. This is especially advisable when villages and other inhabitated places are reached. Boobytraps used under such conditions require treatment by experts in obtaining neutralization with a minimum loss of life. Enginer, pioneer infantry, and explosive ordnance disposal units are best qualified for assignment to such jobs. Tactical units will neutralize boobytraps only to the extent necessary for their continued movement and operation.

62. Organization for Clearance

a. Area clearance is accomplished best during daylight hours and when team personnel are unhampered by enemy action. Avoid tampering with complicated traps under any other conditions.

b. Personnel assigned clearance jobs are divided into disposal teams. Each team should be assigned to work in a specific area. Disposal personnel may be specialized, some being trained to clear buildings and dwellings while others are specialized in outdoor traps.

c. Direction and control will be exercised by the person in charge of clearance operations. He will maintain a control point near at hand and remain in close contact with his clearance parties. He will render assistance when required by a disposal team. Any device found that represents new types of enemy equipment will be preserved for more careful examination by engineer intelligence teams.

d. Searching parties will be adequate in number to cover an area promptly, without danger of interference with each other.

e. When a building is being cleared, one person will direct all searching parties assigned thereto.

f. Clearance in open areas will be preceded by a reconnaissance whenever the presence of boobytraps is suspected. Once existence of boobytrap emplacements in an area is determined, search must be thorough.

Figure 60. Flyer's armor, M1 and M4.

g. Rest searching parties frequently. A tired man, or one whose attention is distracted elsewhere, is a poor risk in a boobytrapped area.

63. Tools and Equipment

a. General. Various tools and items of equipment may be used in searching for boobytraps. Many of the items are similar to those used in clearing minefields.

b. Body Armor. Armor of various kinds can be obtained. Disposal personnel should wear flyer's armor M1 with apron M4 (fig. 60) or armor vests (fig. 61). The latter, being less bulky, are found more suitable where physical dexterity is important. Special boots and shoepacs, available for issue, will give greater protection against blast than shoes normally worn.

c. Mine Detectors. Portable mine detectors are useful tools to employ when searching out-of-doors for boobytraps. In addition to the two types illustrated in figures 62 and 63, a nonmetallic-mine detector, AN/PRS–4 is also available for issue.

Figure 61. Armor vest.

Figure 62. U.S. detector set SCR–625, modified.

d. Grapnels. Hooks suitable for attaching to an explosive charge are useful. They should have an attached length of stout cord or wire, sufficient to place the operator at a safe distance from the explosive or behind suitable cover. The length of cord depends upon type and size of charge. Where suitable cover is not available, a length of 75 yards is adequate for removing booby-traps having a small base charge.

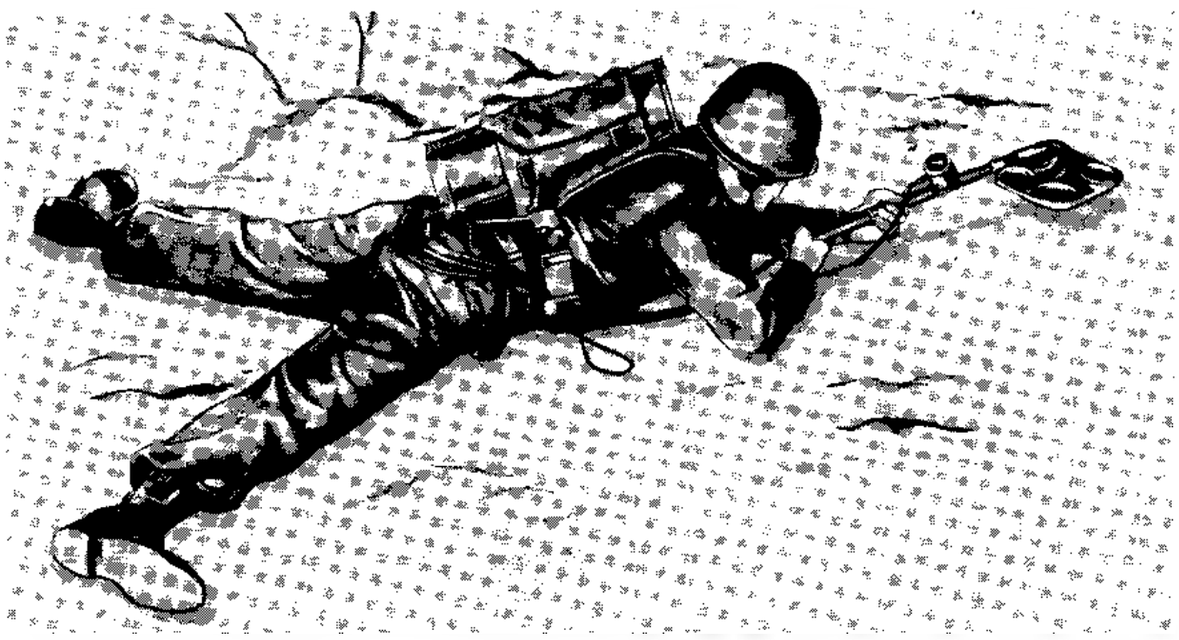


Figure 63. The AN/PRS–3 mine detector.

e. Probes. Lengths of pointed metal rod, stiff wire, or issue bayonets used as probing tools are valuable in searching for and locating buried charges. Searching parties always work with sleeves rolled up while probing to bare the arms for better feeling of hidden objects and trip-wires (fig. 64).

f. Eyeshields. Protection for the eyes will be provided as small explosions, otherwise practically harmless, could cause severe eye damage.

g. Markers. Disposal teams will carry standard markers for use in designating the location of all known boobytraps pending their neutralization.

Figure 64. Probing with issue bayonet.

h. Tape. Some kind of marking tape will be useful for tracing safe routes and for identifying dangerous areas.

i. Handtools. Tools of various kinds are required in neutralizing traps by hand. Small items such as nails, cotter pins, pieces of wire, tape, and safety pins may come in handy. Pliers, pocket knife, hand mirror, scissors, flashlight, screwdriver, and similar items may find profitable uses.

64. Detection

a. Boobytraps can be detected only by most careful observation. Training and discipline must prepare all soldiers to be on guard for boobytraps when traversing any ground previously held by an enemy. While responsibility for detection and clearance of a boobytrapped area may not be his assigned duty, every soldier must learn to be alert for any unusual sign that may betray the presence of boobytraps. A soldier must also discipline himself to avoid performing many actions of a normal life before looking carefully for a concealed trap.

b. Prisoners of war should be interrogated about the presence of traps. Oftentimes information will be obtained about new or unknown devices that will aid in their future identification. Local inhabitants, when friendly, may also be able to give good information regarding boobytraps in their neighborhoods.

c. A thorough search for boobytraps and delayed charges is a difficult and tedious job, particularly when helpful information from civilians or prisoners of war is not available. The extent of search required, the ease with which large charges can be placed and eventually camouflaged, and the many devices available to an enemy make it almost impossible to be sure that a locality has been cleared of all charges. Before searching parties are sent out, they will be briefed on all that is known about enemy procedures in the area.

65. Searching Technique Outdoors

a. Suspect the presence of boobytraps whenever movable and apparently valuable and useful property is found. Equipment, vehicles, food or drink and their containers, kitchen utensils, and souvenirs are all likely hiding places for traps.

b. Litter left from explosive containers gives cause for suspicion.

c. Be suspicious of all disturbed ground.

d. Beware of marks an enemy may intentionally leave behind to attract unwitting attention.

e. Be suspicious whenever evidence of former camouflage is found.

f. Beware of abrupt changes or breaks in the continuity of any object such as unnatural appearance of fences, paint, vegetation and dust.

g. Suspect hidden traps in the presence of unnecessary things, such as nails, wire, or cord, that appear to have no purpose.

h. Whenever unusual marks are noted, remember they may be an enemy identification mark that warns of danger.

i. All obstructions are dangerous because many will be booby-trapped. Search carefully before lifting a stone, moving a low hanging limb, or pushing aside a broken-down wheelbarrow.

j. Beware of queer imprints or marks in dust on a road. They may lead a curious person to danger.

k. Look carefully where you walk; pressure devices can be concealed under relatively small objects.

l. Walk with special caution around abandoned vehicles, dug-outs, wells, machinery, bridges, gullies, defiles, abandoned stores, or similar places. These are all likely locations for enemy booby-traps.

m. Because traps are not found immediately in an area, do not assume without further investigation that none of the area has been trapped.

n. The finding of one trip-wire attached to some object does not necessarily mean there are no others. Searching must be complete.

66. Searching Methods Indoors

a. Organize indoor searching parties with not more than one man per room. Prearrange a signal to denote the finding of a large charge. Instruct all teams except the one responsible for neutralization of such charges to vacate a building immediately by original route of entry when such signal is given.

b. Move carefully in all buildings. Loose boards, movable bricks, carpets, raised boards or stair treads, window locks, and door knobs are but a few of the many places that can conceal or trigger boobytraps.

c. Examine both sides of a door before touching a knob. Observe through a window or break open a panel. The same precautions hold when preparing to open a window. Entrance ways are favorite places for traps. Beware of pressure-operated traps near doors and windows.

d. When doors or windows must be opened and both sides cannot be examined, pull them open with a long rope, or cut a hole through them to permit examination.

e. Do not move furniture, pictures, or similar objects before

examining them carefully for release devices or wires attached to pull devices.

f. Do not open any box, cupboard door, or drawer before examining it carefully. Sticky doors, drawers, or lids should be pulled by means of a long rope.

g. Do not sit on any chair, sofa, or bed until it has been examined.

h. Do not connect broken electric wires or operate electric switches until the entire circuit has been checked. Such action may connect power to a charge.

i. Remove all switch plates and trace all wires which appear foreign to a circuit. Examine all appliances and close all except the *main switch.*

j. Always investigate *repaired areas;* look for arming holes. Enlarge all wall and floor punctures. Cavities are best examined by reflecting the beam of a flashlight off a hand mirror.

k. Empty all fire boxes, remove the ashes, check firewood and move the coal pile.

l. Work from basement upward; check, move, and mark everything movable including valves, taps, levers, controls, screens, etc. A clockwork delay will not be heard if well hidden.

m. Doublecheck basements and first floors by paying particular attention to chimney flues, elevator and ventilator shafts, and insulated dead-air spaces. Straight flues and shafts are best checked from observing one end against a light held at the other. Dog-leg flues can be checked by lowering a brick.

n. Arrange for guards until a building is occupied.

o. After completion of thorough check, and when possible, turn on utilities from *outside* a building.

p. Man can develop his *sense of danger.* By training, experience, and careful, continuous observation of his surroundings while in a combat area, a soldier can acquire an acute instinct that warns him in the presence of danger, a most valuable asset towards self-protection.

67. Neutralizing

a. When a boobytrap is rendered inoperative, making it safe to handle, the trap is neutralized. This condition may be obtained by destroying the boobytrap, or by hand separation of its component parts. Neutralization by hand involves *disarming*— the replacement of safety devices in a firing mechanism, and *defuzing*— the separation of firing device from main charge and separation of detonator from firing device.

b. Types of boobytraps found in a combat zone vary greatly. Experience has shown, however, that equipment used by all

armies is basically the same, differing only in details of construction. Knowledge of the mechanical details of standard U.S. equipment will prepare a soldier to deal with enemy items having similar design characteristics.

c. Once a boobytrap has been discovered, the following methods may be employed in its neutralization.

(1) *Destruction in place.* Employment of this method is advisable whenever location of a trap permits. This is especially advisable where complicated mechanisms have been used or when a boobytrap is particularly dangerous to handle. Destruction in place (par. 68) can be accomplished by detonating a charge of high explosive placed next to the main charge, or by actuating the trap from a safe distance (fig. 65).

(2) *Disassembly by hand.* This is the most dangerous method and will be used only when other methods are unsuitable. Degree of danger depends upon type and condition of boobytrap involved. Simple traps may be rendered harmless either by cutting an electric wire or detonator cord, or by replacing a nail or cotter pin in a safety mechanism. When complicated mechanisms are found, danger is increased materially for disposal personnel. Necessary delay should be taken to obtain complete knowledge of a trap's design before initiating any neutralizing actions.

d. Bypass all complicated mechanisms in any forward movement, marking and reporting their location for later neutralization. When a battle area has moved forward, more deliberate steps may be taken without the harassment of enemy fire.

e. Destroy in place all traps that have been affected by blast from artillery fire or aerial bombing.

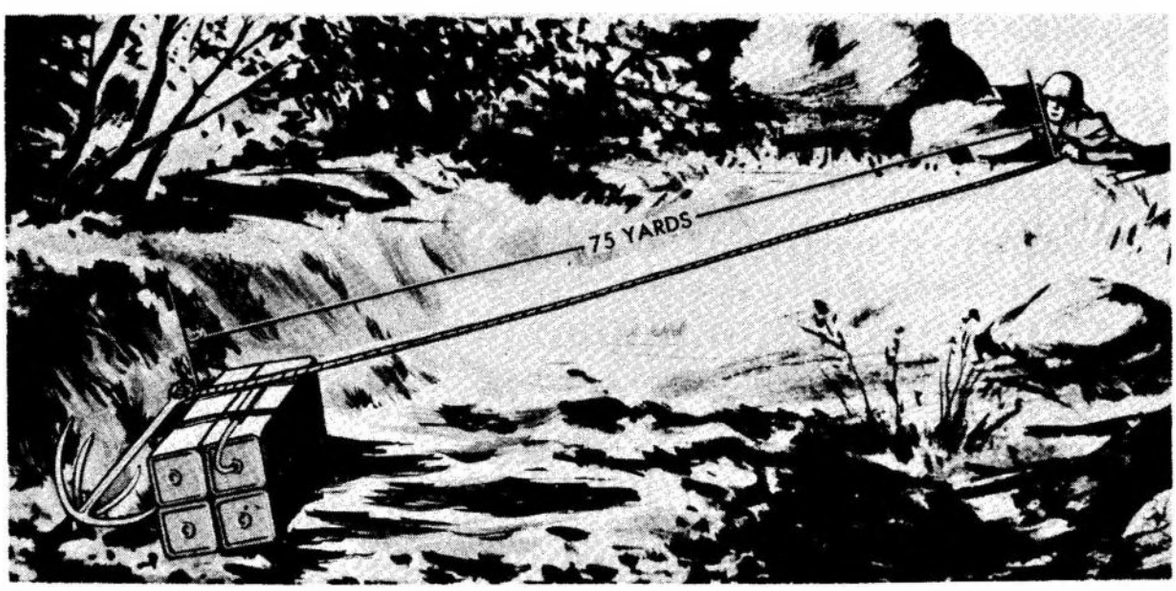


Figure 65. Pulling from safe distance.

f. A boobytrap having an unrecognizable or complicated type of fuze should be clearly marked and left for specialists to neutralize.

(1) *Electrically-operated traps.* Boobytraps of this type are rarely encountered. They may be identified by the presence of electric lead wires, dry cells, or batteries. Some electrically-operated boobytraps make use of photoelectric cells which operate a trap when a light beam is broken or when a wire lead is cut (fig. 66). Engineers should neutralize traps of this kind.

(2) *Delay mechanisms.* Firing devices may consist of a heavy spring-wound clockwork which can be set for long delay periods. One such German device used during World War II had a maximum delay of 80 days. It was operated by three large telescopic springs which had to be mechanically wound. Clockwork boobytraps are easy to recognize and neutralize.

(3) *Others.* Delay firing devices may also consist of small lead-break or chemical-delay mechanisms. Once started, action of these cannot be stopped. Destruction in place is necessary when a firing device cannot be separated from a main charge or when a main charge cannot be removed.

g. Observe the following rules of conduct in dealing with all boobytraps—

(1) Keep in constant practice by inspecting and studying all known boobytrap methods and mechanisms.
(2) Develop patience. A careless act may cost many lives including your own.
(3) Remember that knowledge brings confidence.
(4) Let one man deal with a boobytrap and keep others out of danger.
(5) When in doubt, get help from an expert.
(6) Be especially carefully when tired.
(7) Expect constant changes in enemy mechanisms and methods.
(8) Never bunch together when there is danger.
(9) Be suspicious of every unusual object.
(10) Remeber any enemy, regardless of nationality, is a ruthless, cunning, and ingenious killer.

68. Procedures for Removing

a. When resultant damage is acceptable, which is usually the case when out-of-doors, traps may be sprung by use of their own tripping mechanisms. When a trip-wire has been located and

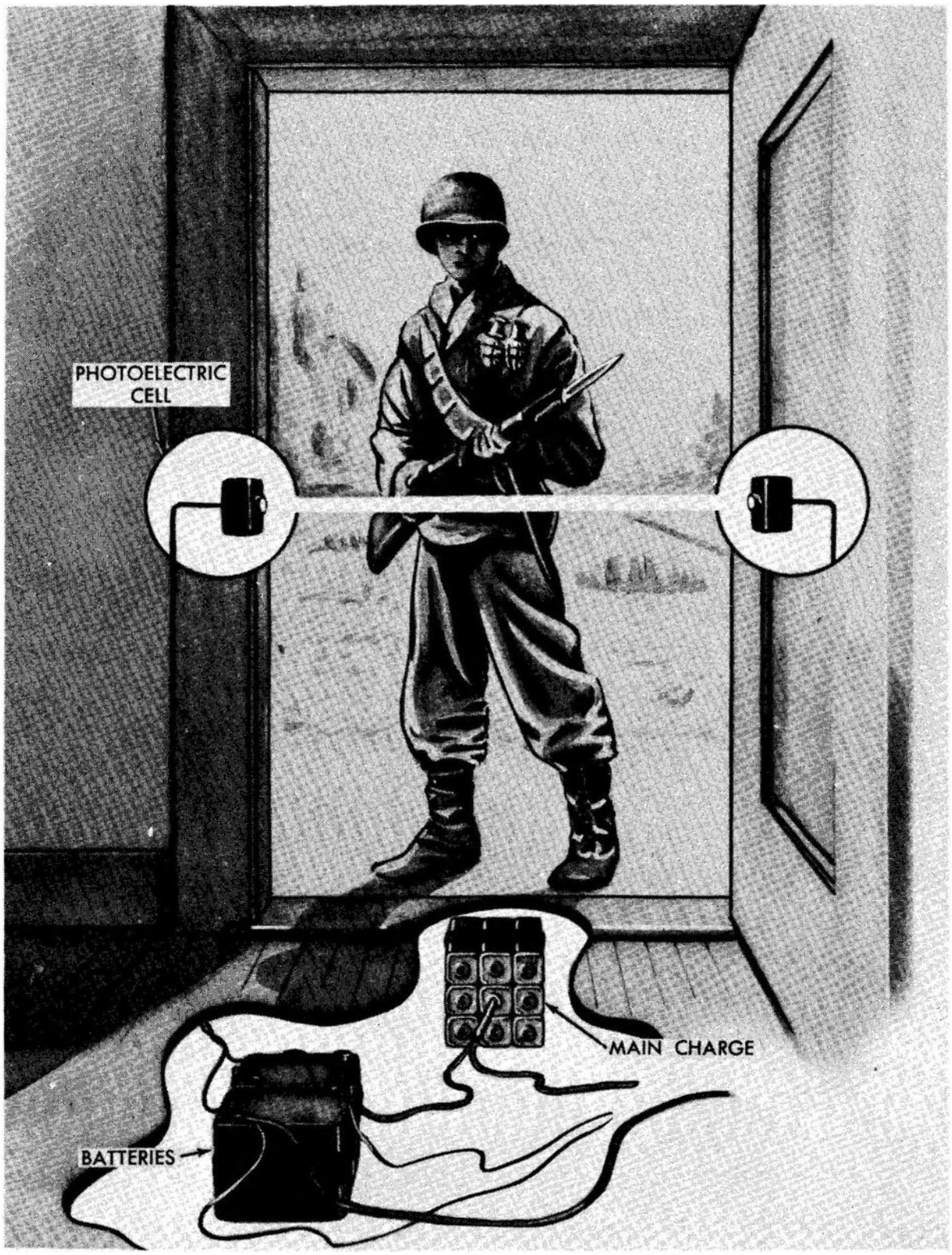


Figure 66. Photoelectric cell trap.

identified it should be pulled from a distance of 75 yards or more with the operator protected by suitable cover. A grapnel may be used for this purpose or a grapnel may be fastened directly to the main charge and the boobytrap pulled away from its anchorage.

b. Destruction in place may also be accomplished with much less trouble by simply detonating a charge of high explosive placed adjacent to the main charge. A ½-pound demolation block connected to a suitable fuze will serve this purpose. Care must be

exercised to keep an area clear of prsonnel during claranc operations. Scattered debris from demolition operations may be materially reduced by covering a main charge with sand bags.

c. When removal of a main charge to a suitable burning ground is planned, detachment of all devices leading to firing mechanisms is necessary. Careful probing or search around entire charge is required to locate and neutralize all antilift devices. All safety devices must first be replaced in attached detonators or firing devices. Recognition of the type of mechanism used is necessary to insure thoroughness. When a charge has been neutralized, it may be handled and transported safely to a burning ground. Whenever doubt as to complete neutralization of a charge exists, removal at the end of a 75-yard grapnel is prescribed. When a grapnel is used, wait 30 seconds for protection against a concealed delay-action fuze.

d. Hand disarming methods should not be employed by units other than specially trained engineers, ordance, or pioneer infantry personnel, except where a boobytrap's characteristics and the technique prescribed for its neutralization are common knowledge. Trained personnel only should inspect and destroy all unusual or complicated boobytrap mechanisms, not only for safety, but to obtain information regarding new enemy devices.

e. Hand neutralization of a boobytrap entails certain prescribed actions. These are listed for guidance only, as an exact sequence for any particular boobytrap must depend upon its type and manner of emplacement—

(1) Do not touch a mechanism until it has been thoroughly examined and all firing devices located and traced to their triggering mechanisms.
(2) When tracing wires, search for concealed intermediate devices that may have been emplaced to impede searching operations. Do not disturb wires during survey of trap.
(3) Cut loose trip-wires (fig. 43) making certain of all connecting objects and their functions.
(4) Trace taut wires and disarm attached firing devices by replacement of safeties. Taut wires may be severed only when danger at both ends has been eliminated.
(5) Replace safety devices in all mechanisms, using nails, wires, cotter pins, or the like.
(6) Never use force in neutralizing a trap.
(7) Without disturbing main charge, cut detonating cord or other leads between neutralized firing devices and main charge.

(8) When cutting wires leading to an electrical detonator, cut them one at a time.

(9) When using a probe, push it gently into ground. *Stop* when an object has been touched.

(10) Once separated, boobytrap components should be removed for safe storage or destruction.

f. Special precautions are indicated when delay-action mechanisms are found. While little danger is present until the appointed time, such traps are quite likely to be equipped with auxiliary firing mechanisms. Carefully remove or disconnect delay-action fuzes from a boobytrap where no other firing device is present. Complicated and confusing mechanisms are best destroyed in place or marked for the supervision of experts.

g. Explosive containers made of wood or cardboard that have been buried in ground for long periods of time are dangerous to remove. Clearance personnel must be cautioned in using probes to locate buried explosive charges of boobytraps that may be in an advanced state of decomposition. High explosives which have deteriorated are particularly susceptible to sympathetic detonation. Areas where traps are highly concentrated are especially dangerous when traps are being destroyed in place after prolonged exposure to moisture. All traps in an area may detonate simultaneously.

h. Metallic explosive containers are also dangerous to remove after they have been buried for long periods. They will rust to such an extent that it becomes impossible to detect their location with a magnetic mine detector. In general, metal containers equipped with waterproof seals will withstand the action of soil moisture better than wooden or cardboard containers. Eventually, however, a metal case will rust and its explosive filler will become contaminated.

i. Some types of fuzes become extremely sensitive when they are exposed to soil moisture. The only safe method of neutralizing boobytraps after long periods of emplacement is destruction in place.

69. Disposal of Explosives

a. Safety must receive major consideration in the destruction of explosives. Components of boobytraps are sometimes made immeasurably more dangerous than normal because of increase in sensitivity of explosives resulting from exposure. Destruction must render all items harmless as well as useless. When serviceable items of ammunition are destroyed in a retrograde movement, their value to an enemy should be reduced to a minimum.

b. Risks will be greater when speed is necessary. Under such

conditions explosive items will be destroyed in place, while all safety measures that the situation permits will be enforced. When possible, items will be covered to reduce scattering of debris.

c. Under normal operating conditions, explosive items that are serviceable will be turned in to ordnance for disposal by specially trained personnel. Before being turned in, however, such items will be disarmed and made safe for handling.

d. Should disposal of ammunition by troops other than trained ordnance personnel become necessary, they will exercise the greatest of care and comply, insofar as time will permit, with established disposal procedures.

e. Ammunition or explosives to be destroyed by detonation should be buried in a pit not less than 4 feet deep and covered with not less than the equivalent of 2 feet of earth. Care will be exercised to insure that material used to cover a pit is free of rock or other matter which would increase flying debris. Components should be placed on their sides or in position to expose their largest area to the influence of initiating explosives. An adequate number of demolition blocks should be placed in intimate contact on top of items to be destroyed and held in place by earth. Other materials, such as bangalore torpedoes or dynamite, may be substituted for demolition blocks. Never place blasting caps, primers, detonators or other types of sensitive explosive components to be destroyed in the same pit with unserviceable ammunition. Crushing due to covering material or heavier components may cause detonation. Always connect primer charges to surface by means of detonating cord. This permits the blasting caps to be connected at the last moment, and prevents having to open a pit in case of misfire.

f. Where space permits and a demolition area is located remote from inhabited areas, detonation of boobytrap components and explosives may be accomplished without the aid of a pit. However, the total quantity to be destroyed at one time, depending upon local conditions, should be limited to a small pile.

g. Unserviceable ammunition may also be dumped at sea. When use of this method is desired, the provisions of SR 75–70–10 will govern, unless otherwise directed by the theater commander. Dump well away from land as ammunition washed ashore may become a distinct hazard.

h. All disposal personnel take cover when items are detonated. Even with earth covering, fragments may be thrown at high velocity for several hundred yards. Other safety procedures involved in ammunition disposal are covered in TM 9–1900 and FM 5–25.

CHAPTER 8

BOOBYTRAPPED MINES IN MINEFIELDS

70. Use of Mines in Boobytrapping

a. As previously stated, a land mine may be used as the main explosive charge in a boobytrap. Figure 67 illustrates the components of a typical mine. Figure 68 shows the antipersonnel mine M14, which is effective against personnel within 2 or 3 yards. Its compactness makes it attractive for use as the main charge in boobytraps. Antitank mines (fig. 69) may be used when a larger charge is desired.

b. However, another important application of mines to boobytrapping is the *boobytrapped mine* used in minefields. The difference between a boobytrap and a boobytrapped mine should be noted. A boobytrapped mine is any mine having a supplementary fuze, or a separate charge, arranged to detonate the mine when

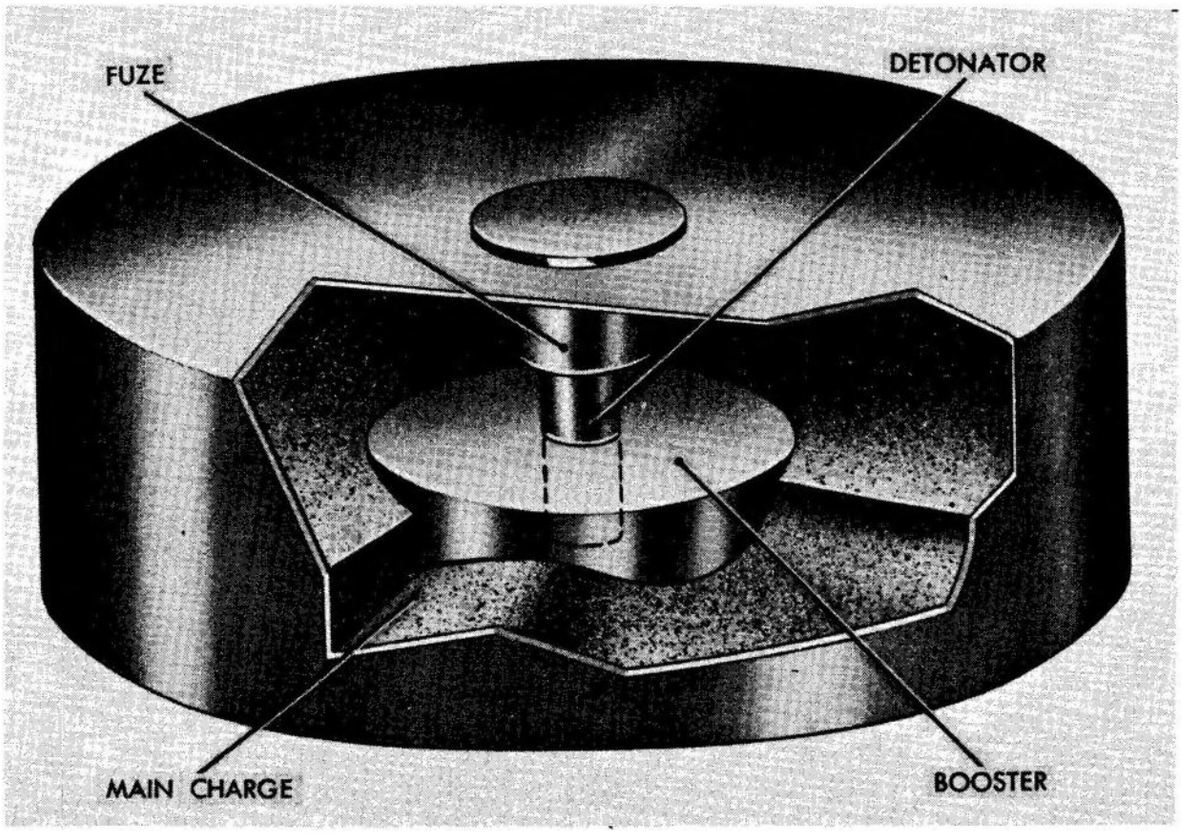


Figure 67. Components of a typical mine.

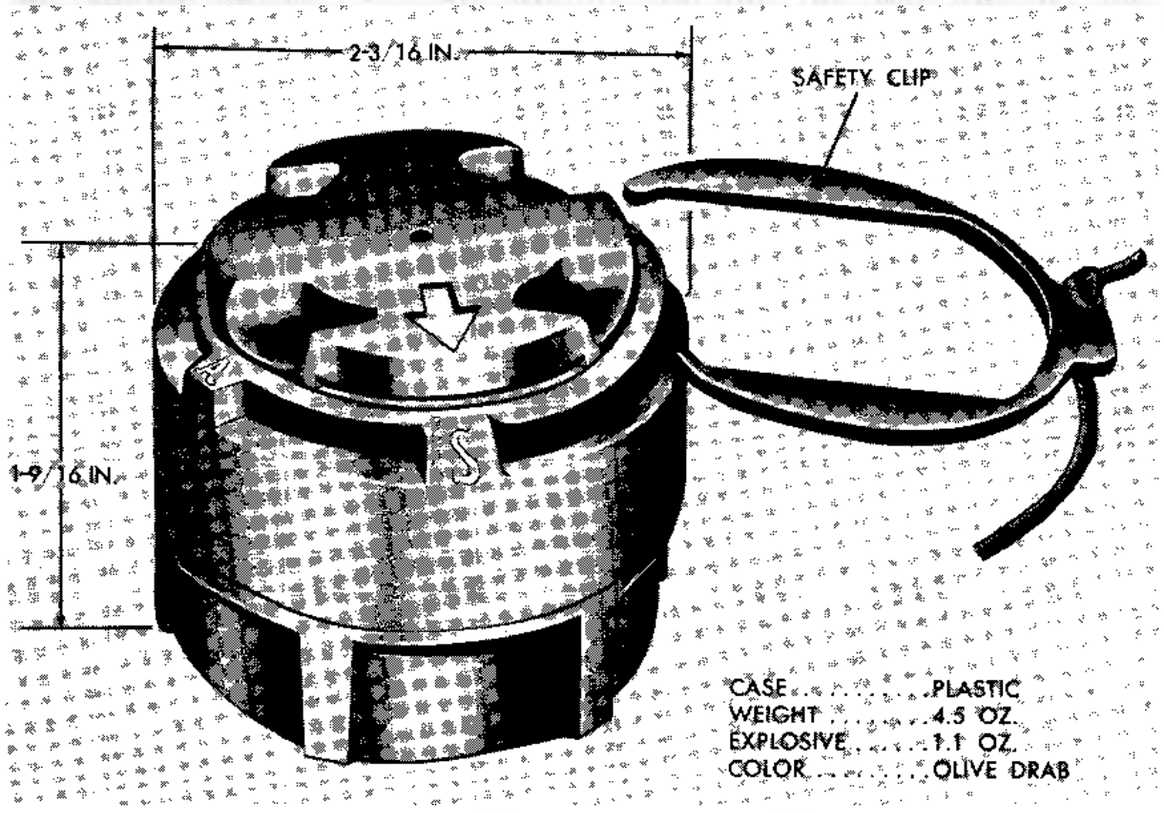


Figure 68. Mine, antipersonnel, M14.

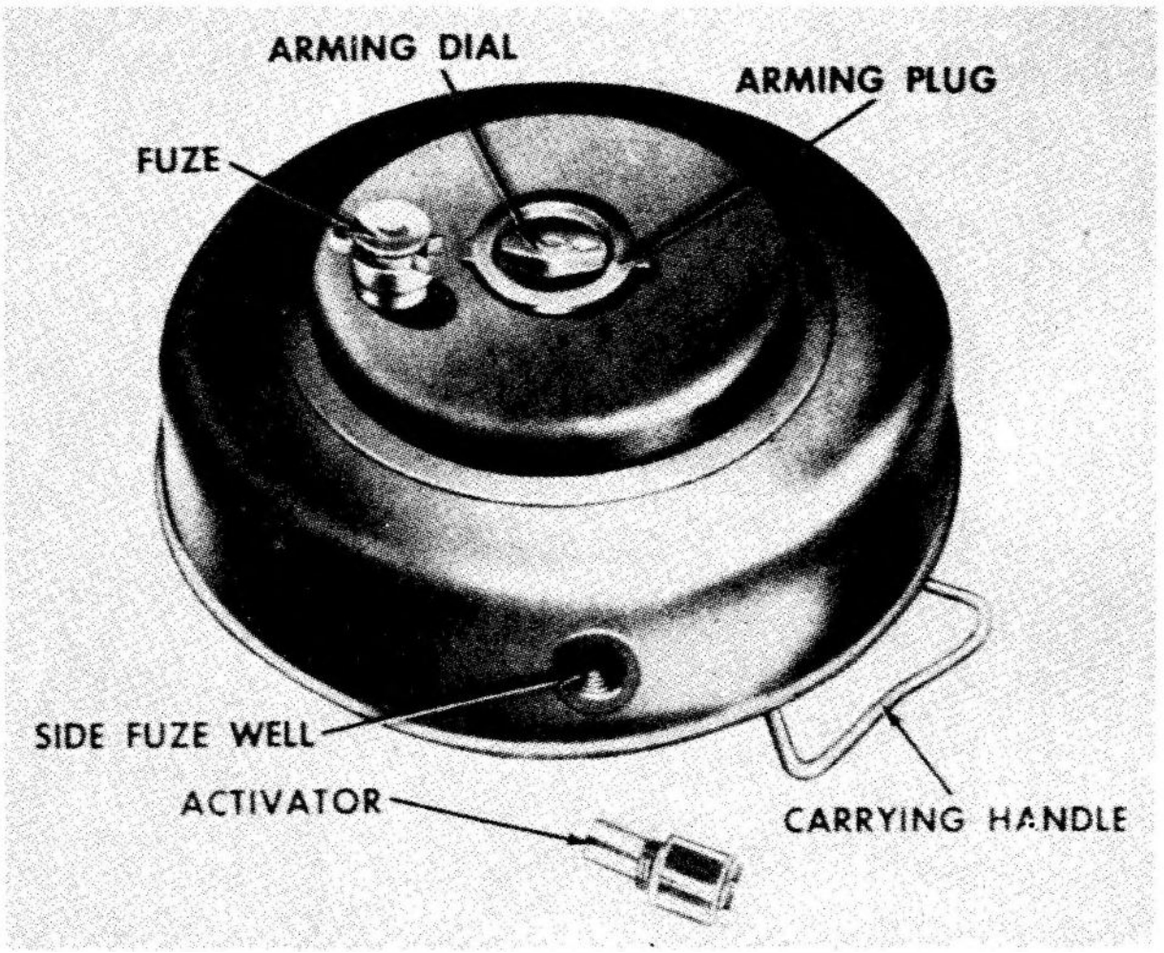


Figure 69. Mine, antitank, HE, heavy, M6A2.

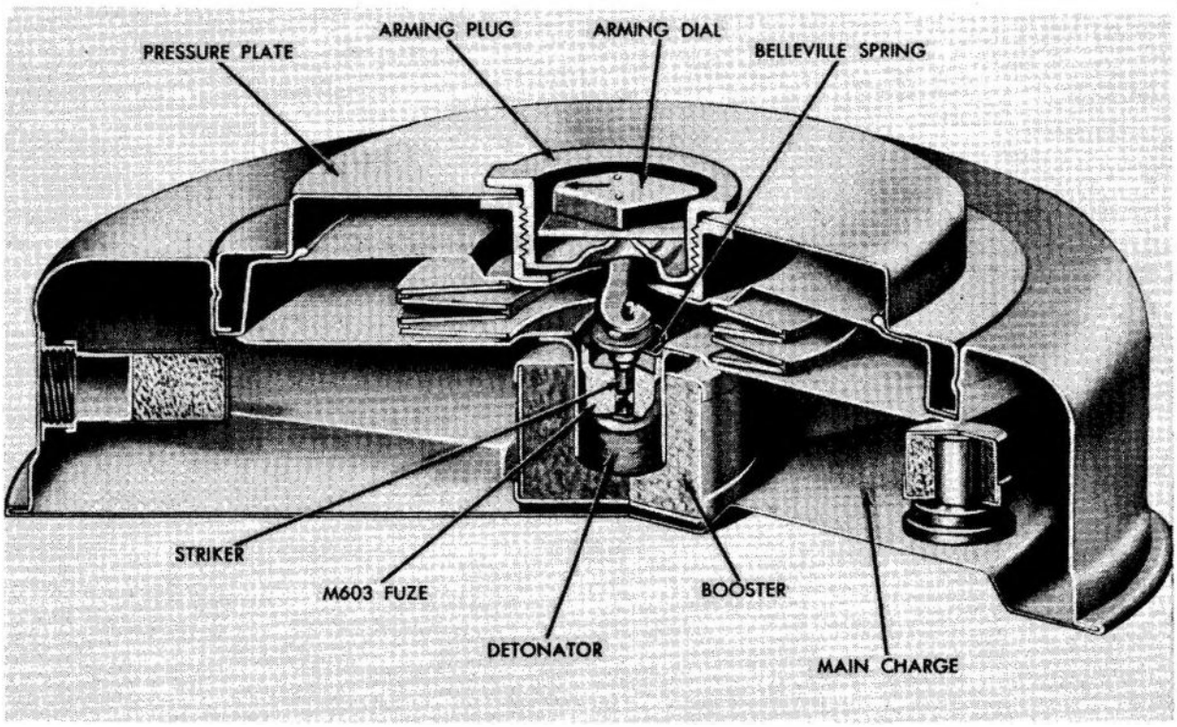


Figure 70. Cutaway view of M6A2 mine.

the mine is disturbed, even though the main fuze has been removed. Most antitank mines have one or more secondary fuze wells for this purpose (fig. 70). However, mines without secondary fuze wells can also be boobytrapped. Firing devices can be connected to a mine so as to explode a separate charge when the mine is disturbed. Mines are boobytrapped in order to delay enemy breaching of minefields.

71. Methods of Boobytrapping Mines

a. Mines may be boobytrapped by the application of antilift, antitilt and antipull devices.

b. Pressure release firing device M5, coupled with an M1 activator, lends itself admirably for use with antilift boobytrapped mines (fig. 71). During emplacement, exercise care to insure that supports for both mine and firing device are stable and that weight of mine is balanced so as to hold release plate of firing device in closed position before any effort is made to remove safety pin that arms firing device. Deceptiveness in this type of boobytrapped mine is largely dependent upon thoroughness of concealment. Excavate only as necessary to obtain just enough space below mine for firing device. Provide no larger support below than ground conditions require. Permit no evidence of this additional excavation to remain in mine cavity or to extend beyond base of mine. As in all boobytrap construction, procedures outlined in chapter 5 are mandatory.

c. Another type of boobytrapped mine is obtained by using one of the pull type firing devices along with an activator M1 (fig.

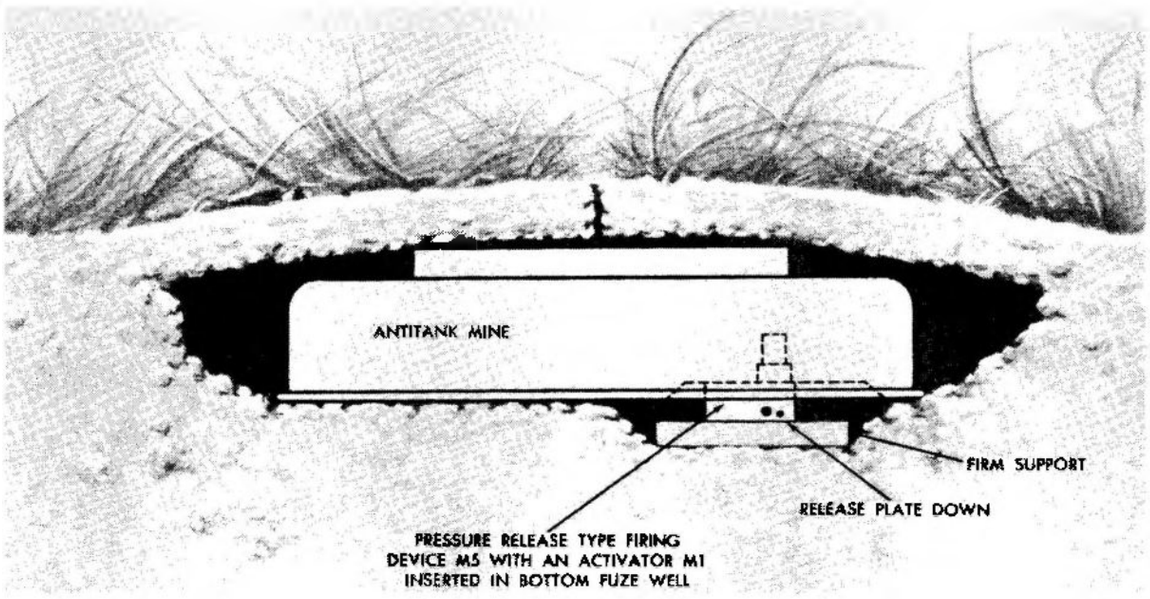


Figure 71. Mine with an attached antilift device.

72). When so used, exercise care to secure anchor stakes so they will not pull out instead of firing mine. Antitilt and antipull effects are obtained primarily from the use of mine side fuze wells.

d. More than one firing device may be employed with a single mine (fig. 73). Upon discovery of one device clearance personnel may become so absorbed in its neutralization that they actuate a second device that has not been detected.

e. Mines are frequently boobytrapped by joining two mines together so that lifting of the top mine will detonate, through a pull type firing device, the mine attached below (fig. 74). Fill in with loose dirt all space between the two mines and keep to a manimum the length of wire that joins top mine to firing device of bottom mine.

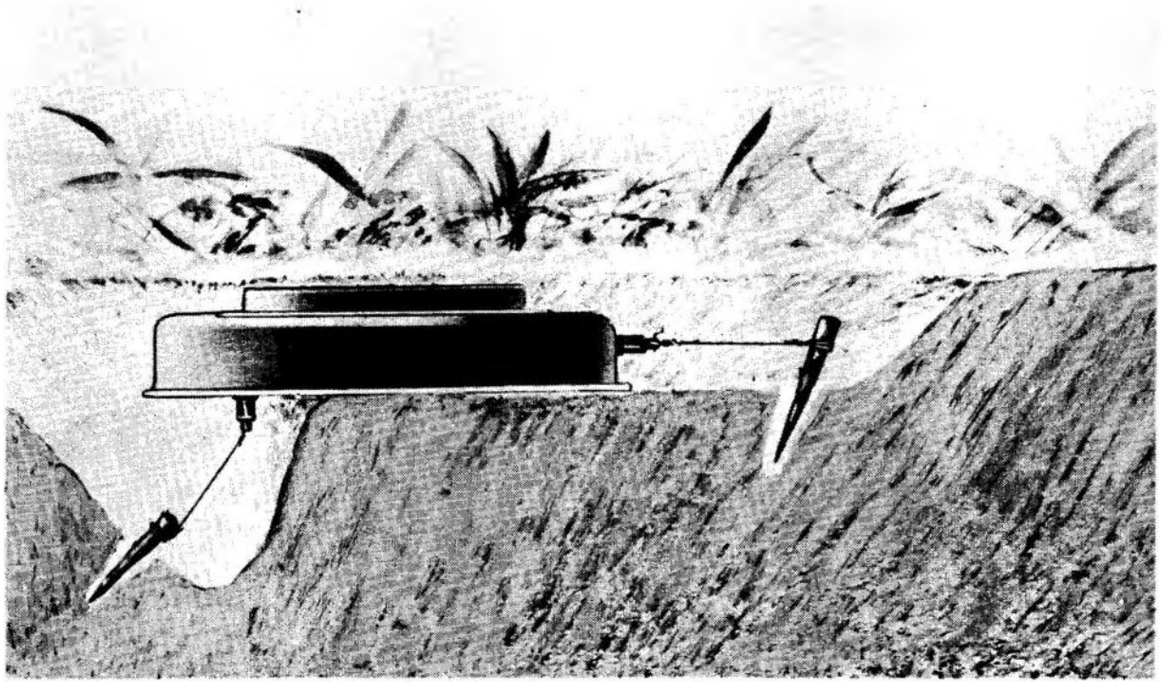


Figure 72. Mine boobytrapped with pull type firing devices.

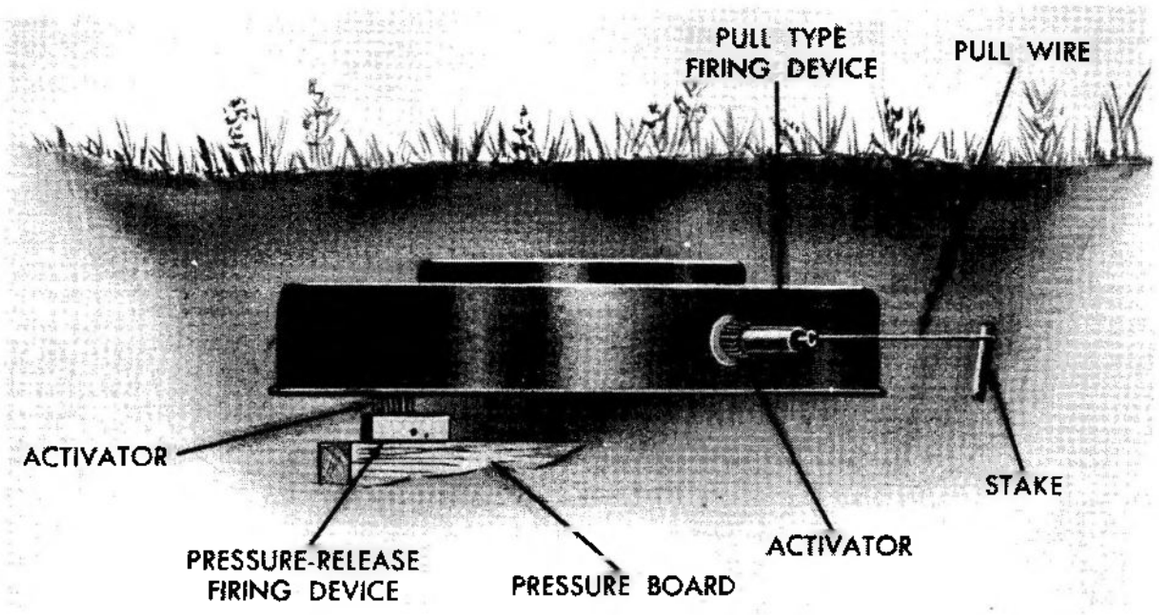


Figure 73. Multiple boobytrapped mine.

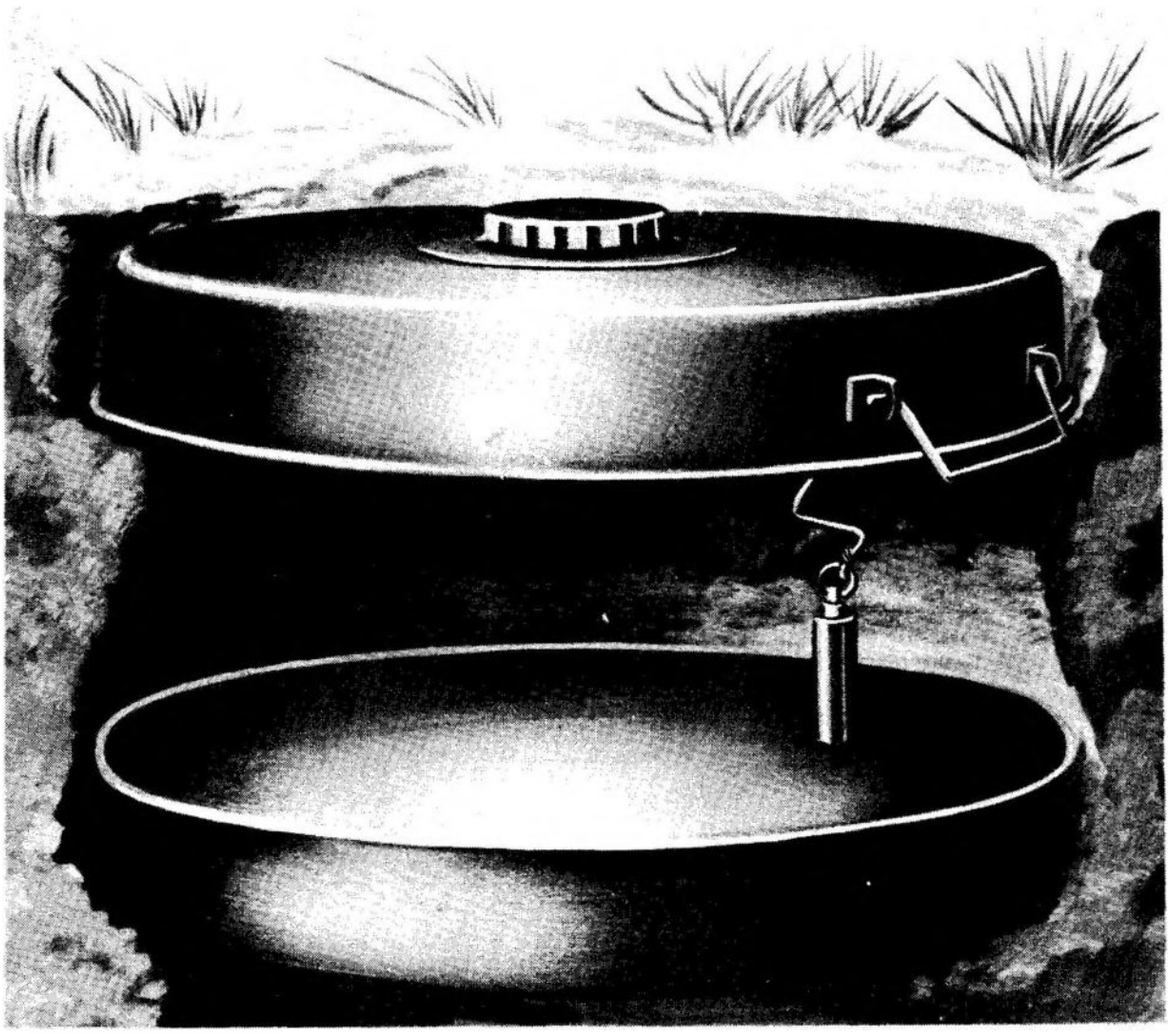


Figure 74. Boobytrapping one mine to another.

CHAPTER 9

BOOBYTRAPPING STRUCTURES

Section I. BUILDINGS

72. Tactical Importance

a. Structures will always be a favorite place for concealing boobytraps. Buildings offer a degree of comfort and shelter from the elements. They provide locations for headquarters where plans may be made and communications installed with greater dispatch.

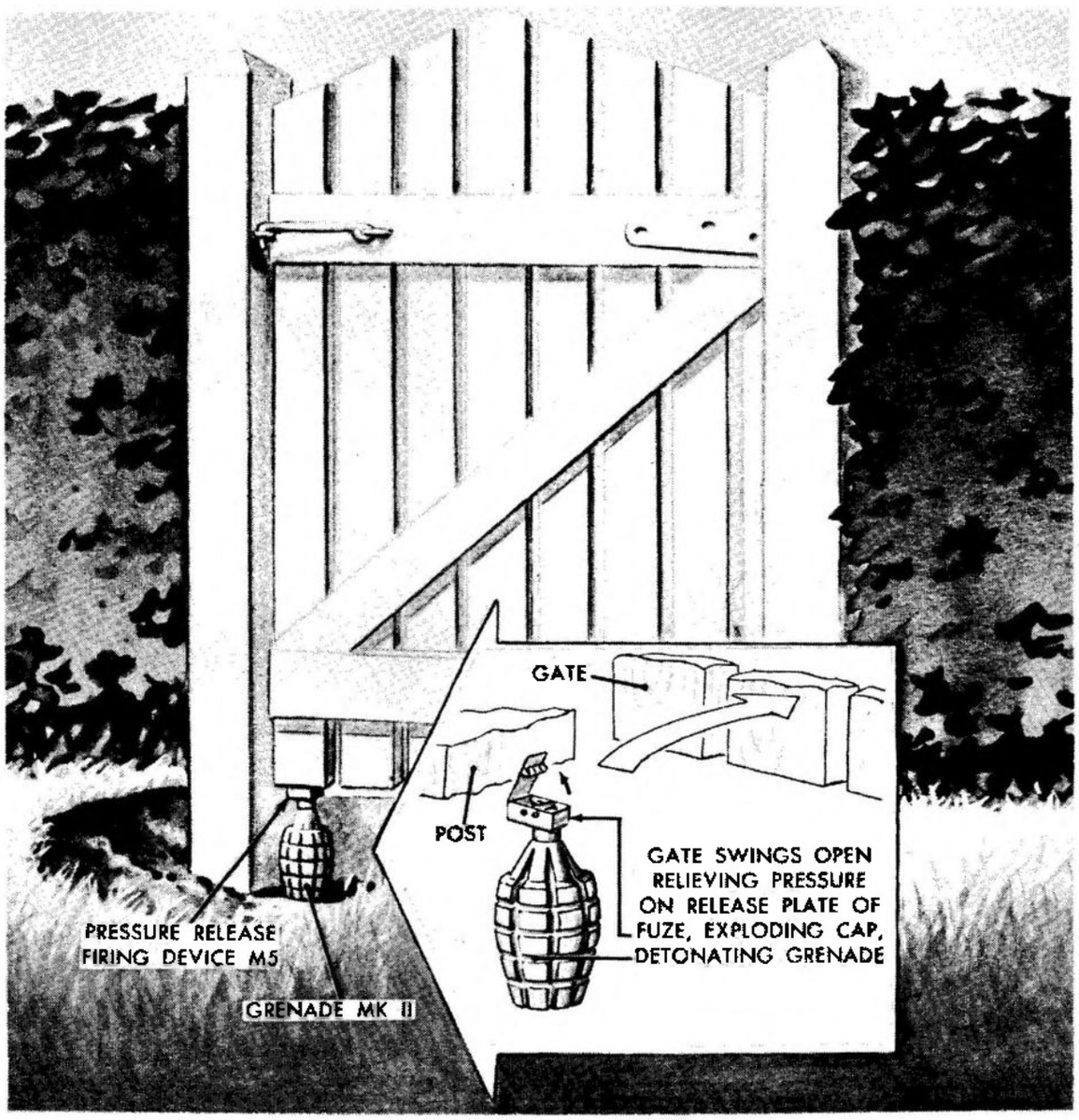

GATE
POST
GATE SWINGS OPEN RELIEVING PRESSURE ON RELEASE PLATE OF FUZE, EXPLODING CAP, DETONATING GRENADE
PRESSURE RELEASE FIRING DEVICE M5
GRENADE MK II

Figure 75. Gateway to danger.

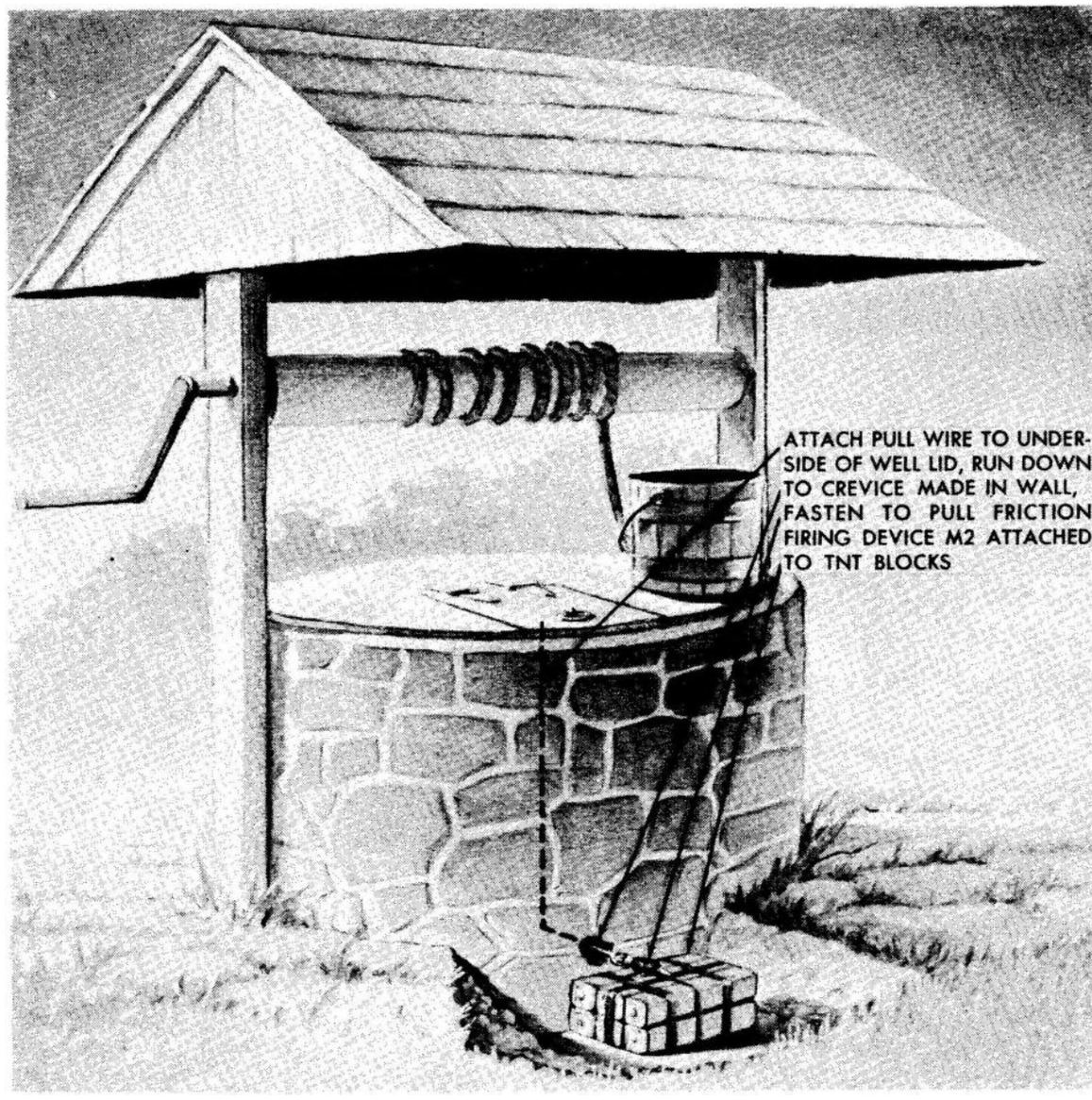

ATTACH PULL WIRE TO UNDER-
SIDE OF WELL LID, RUN DOWN
TO CREVICE MADE IN WALL,
FASTEN TO PULL FRICTION
FIRING DEVICE M2 ATTACHED
TO TNT BLOCKS

Figure 76. Water hazard.

Because of these advantages, soldiers will undergo unusual risks to secure buildings and make them habitable.

b. Whenever a structure is occupied, its surroundings take on new importance. A headquarters or a dwelling becomes a focal point from which lines of communication and travel extend in many directions. Consequently the area surrounding structures, especially in the immediate vicinity, becomes a potential booby-trapping region.

73. Immediate Surroundings

a. Around an average dwelling will be found many places of interest. There may be outhouses, woodpiles, fruit trees, and other similar places which are excellent locations for boobytraps. An entrance gate into a yard may be rigged with a boobytrap as shown in figure 75. Should a well or spring be found nearby, it can be trapped as shown in figure 76.

b. There may be occasion to place a delayed-action charge to

blow up a building after it has been occupied. A rain barrel trap of the type shown in figure 77 may be appropriate. This is a typical electrolytic delay-action trap. It could very well be placed in a cistern with a slow running water inlet. Insulated electrical leads extend above water to the level where detonation is desired and where bare electrical contacts are exposed. The charge may be placed wherever it will provide desired damage. When the water level reaches the bare contacts the electric circuit is closed and the electric detonator is fired. Common salt or acid placed in the water is usually necessary to provide insurance that the circuit will close when the water touches the two contracts.

74. Entrance Ways

a. Curiosity prompts a soldier to investigate hurriedly whenever an interesting building is found in his path. Women, loot,

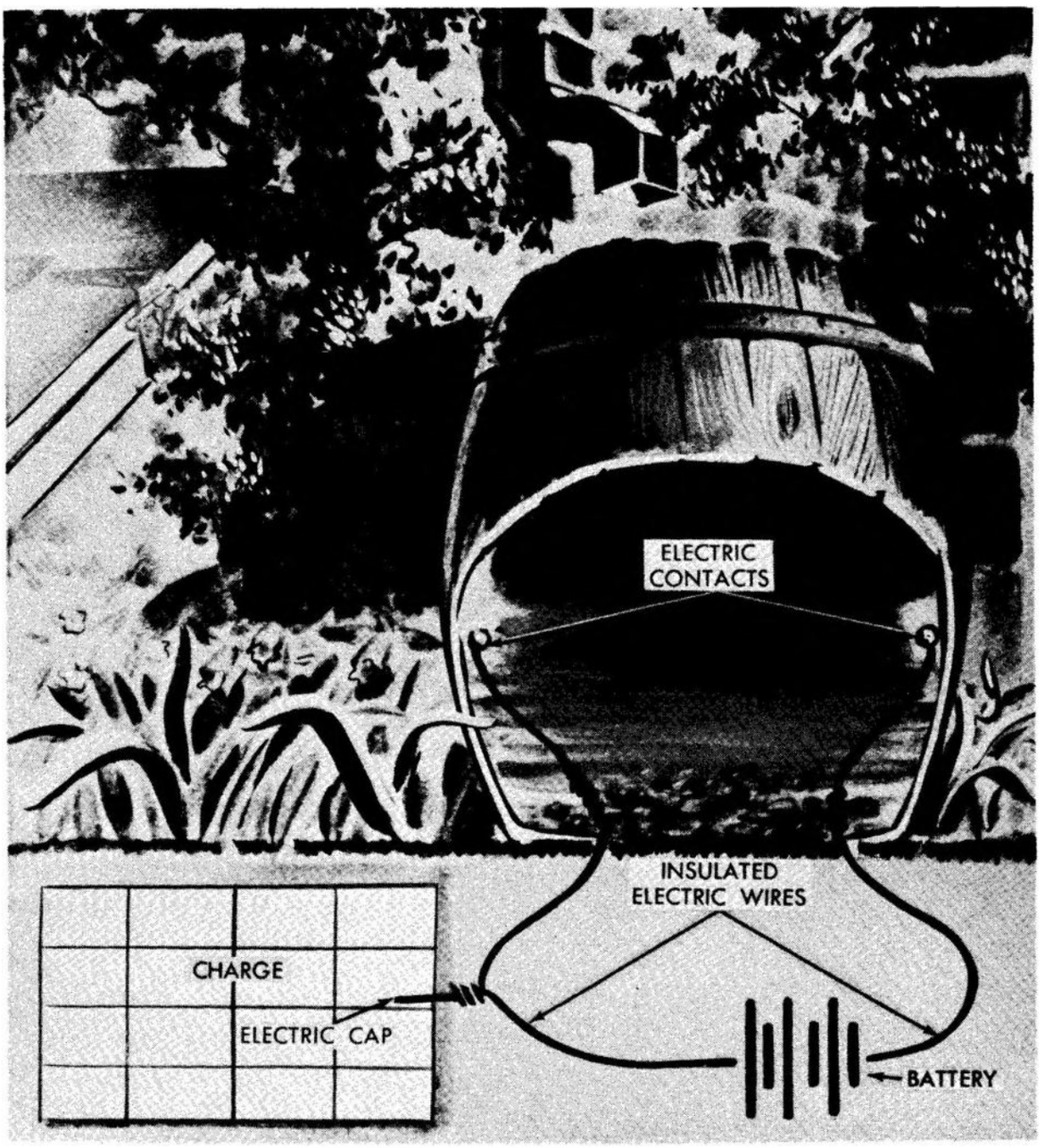


Figure 77. Water barrel boobytrap.

Figure 78. German door boobytrap.

shelter, or simple inquisitiveness may be the magnet that draws his interest. His rush to be the first inside makes entrance ways especially desirable for boobytrap emplacements.

b. A simple door mat may be used to hide a trap. A porch step or loose board may serve a similar purpose. Using the antipersonnel mine M14 as a trap, there are numerous suitable places to be found around entrance ways to structures.

c. A door itself can be trapped to catch an intruder. A charge may be detonated by the turning of a doorknob. An ingenious device of this kind employed by Germans in World War II is shown in figure 78. Another adaptation of a door trap is shown in figure 79. There are countless other methods to employ the swinging of a door such as shown in figure 80 where opening of

the door releases a pressure-release device that cannot be seen from either side of a closed door.

d. Windows also offer excellent places for placing traps. By studying the trap illustrated in figure 81, a dozen or so other variations will spring to mind. A moving window may be used to trip nearly any firing device. A lift of but a fraction of an inch will detonate the one shown in figure 82.

75. Structural Framework

a. When a building may serve an enemy in a useful manner, its eventual destruction as well as the upsetting of his future plans may be obtained through use of boobytraps. Charges should be placed where detonation will seriously impair a building's

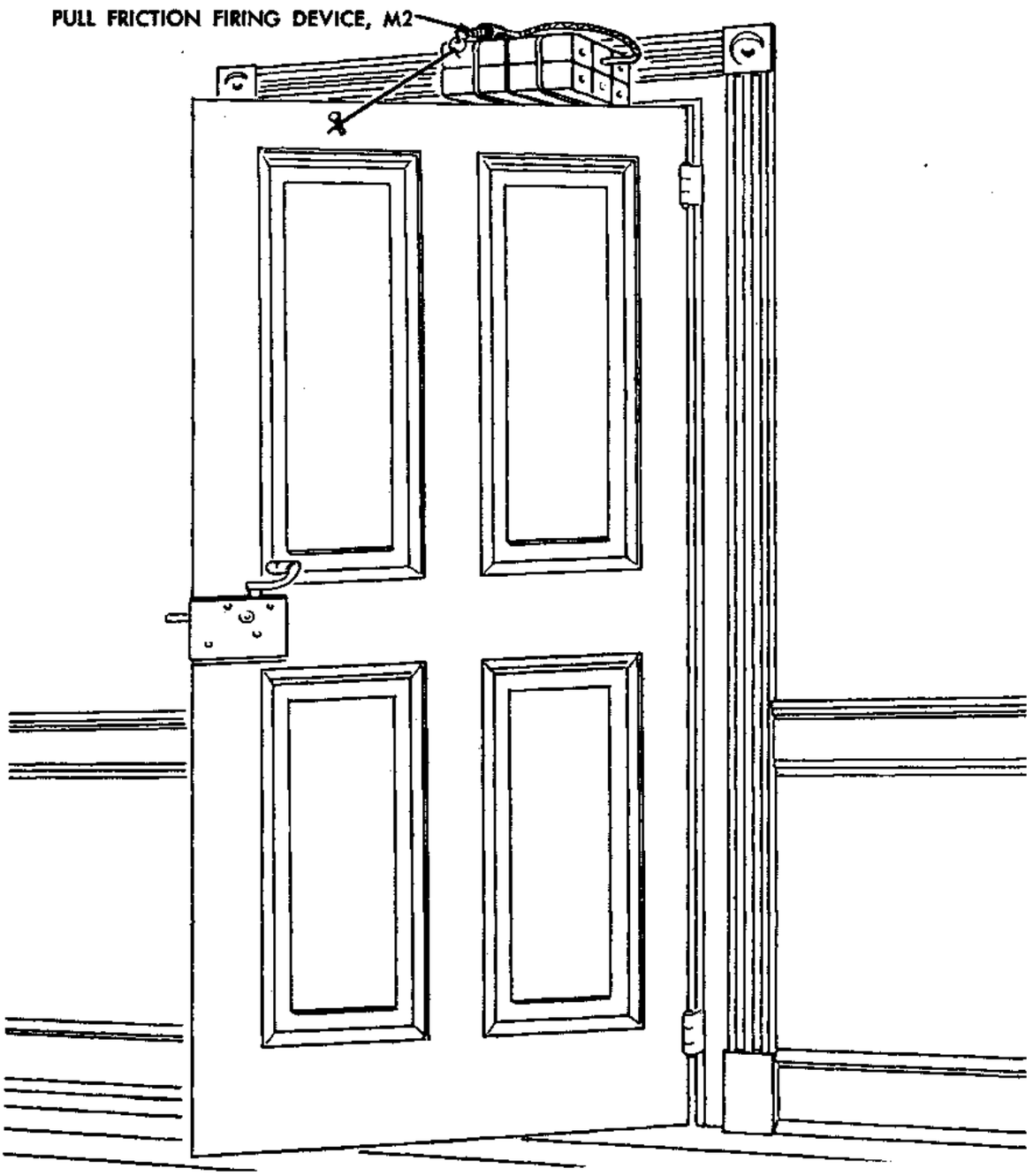


Figure 79. Open door trap.

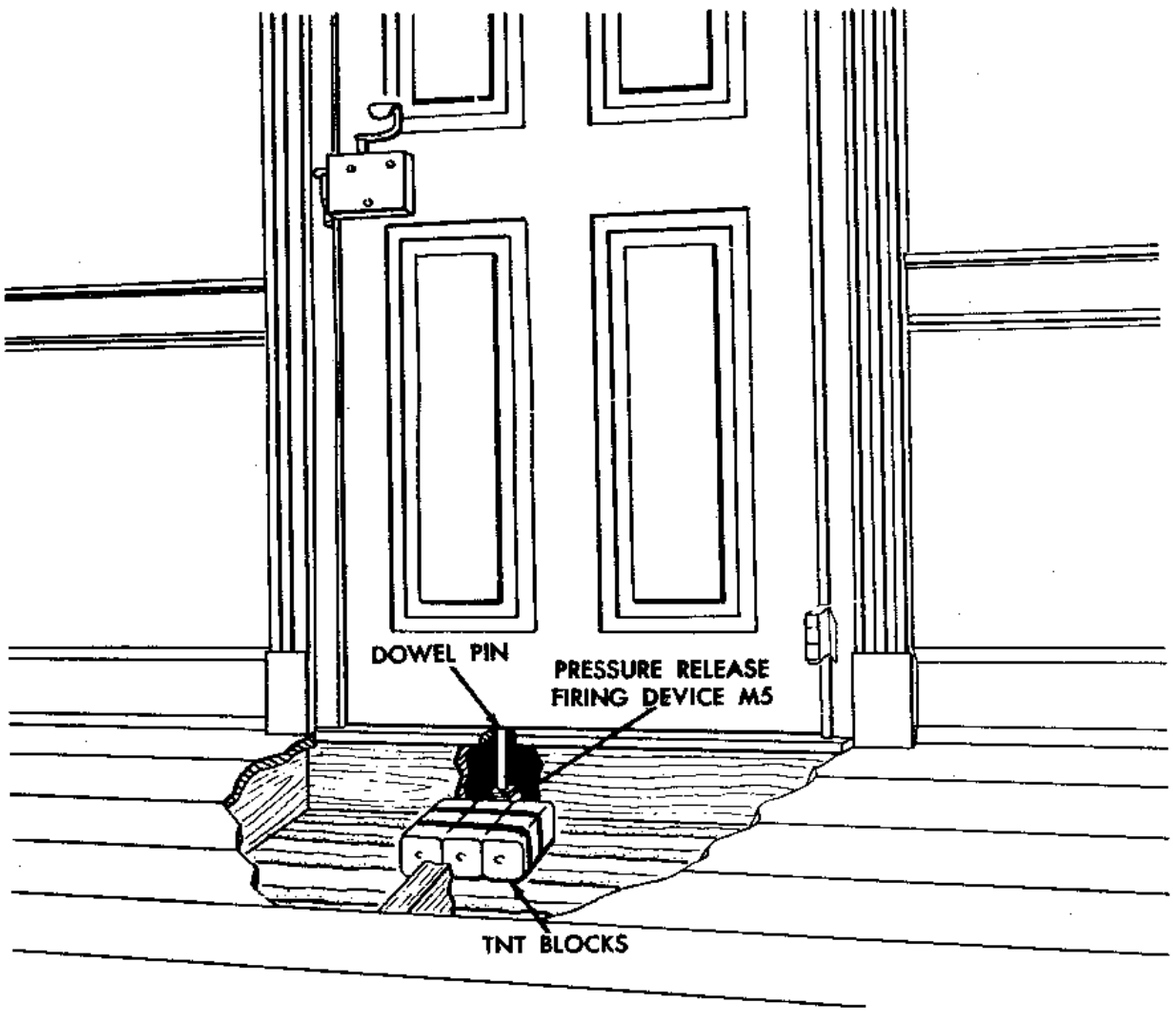


Figure 80. Closed door trap.

structural strength. Damage may be directed toward walls, chimneys, beams, or columns.

b. When load-bearing walls are boobytrapped, it is a good plan to place several charges that will detonate simultaneously. Charges should be located near the bottom of walls as shown in figure 83 so portions will collapse.

c. Chimneys and fireplaces are easy to boobytrap. When anticipating enemy occupancy of buildings during cold weather, suitable boobytraps can be concealed where detection will be difficult (fig. 84). Grenades and mortar shells are suitable for concealment in open or closed fireplaces and in casual piles of wood or other flammable items that may be found desirable as enemy bonfires. Items used should be placed where heat of combusion will become intense (fig. 85). In order to reveal presence of grenade, concealment in the illustration is not as complete as would be necessary in practice.

d. Beams and columns, being more substantial than walls, will cause greater damage when they collapse. When building destruction is important, boobytraps should employ large quantities of

explosives. Figure 86 illustrates an explosive charge attached to a beam. Figure 87 illustrates an explosive charge buried below ground level at the base of a column. Placing charges which are set to detonate after a fixed period of time is considered mining, rather than boobytrapping, but this type of charge is illustrated here because it may be placed or encountered in likely boobytrap locations. It needs no initiation by personnel. Supplemental firing devices may be employed to foil searching parties where delay elements are used to control time of detonation.

e. Other structural emplacements may be selected by referring to FM 5–10. Boobytraps like the one shown in figure 88 can be improvised quickly, using nails to provide supports for boobytrap components. Make certain that weight of a loose board selected as a trigger is not alone sufficient to trip the firing device.

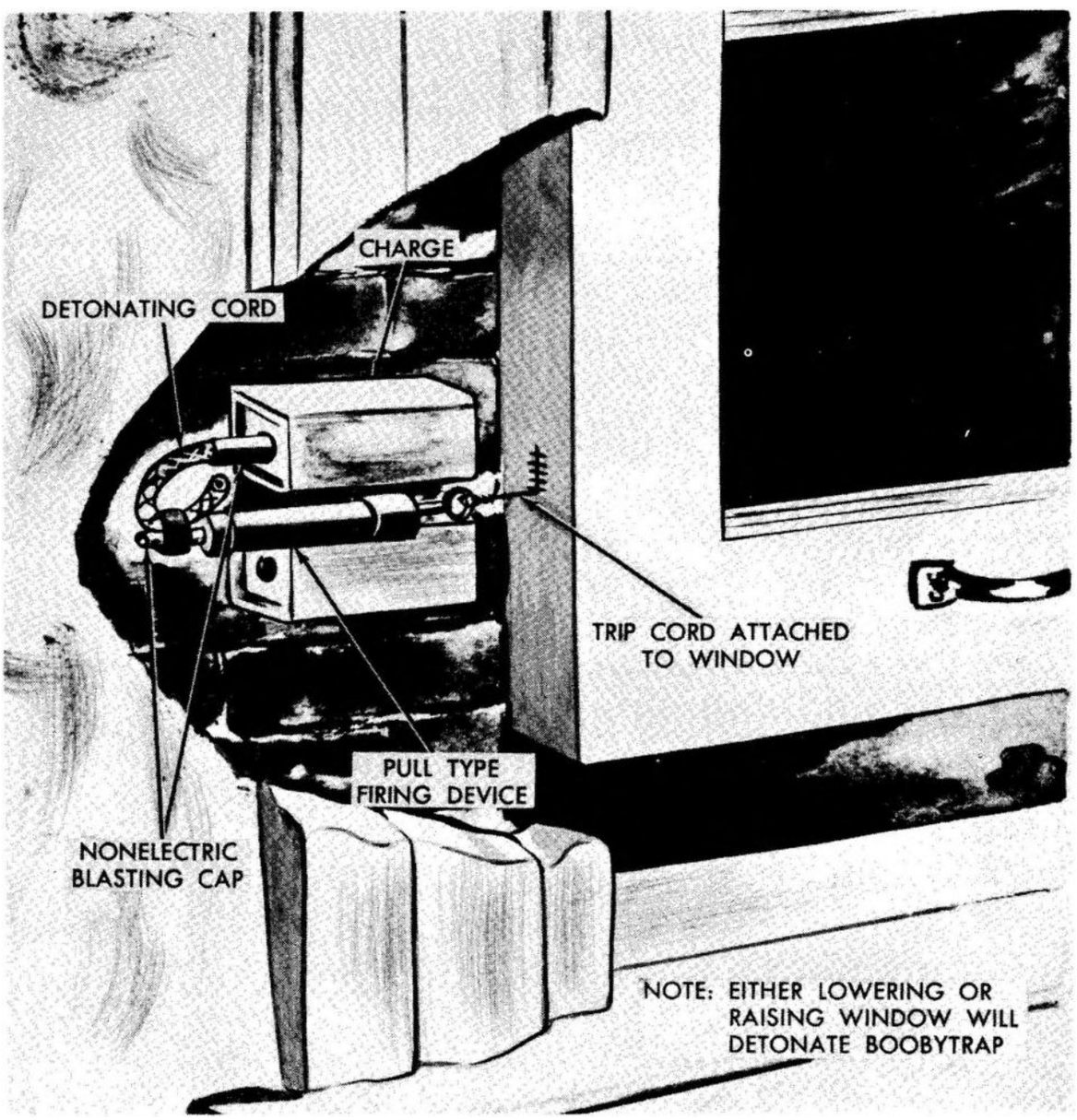

CHARGE
DETONATING CORD
TRIP CORD ATTACHED TO WINDOW
PULL TYPE FIRING DEVICE
NONELECTRIC BLASTING CAP
NOTE: EITHER LOWERING OR RAISING WINDOW WILL DETONATE BOOBYTRAP

Figure 81. A window trap.

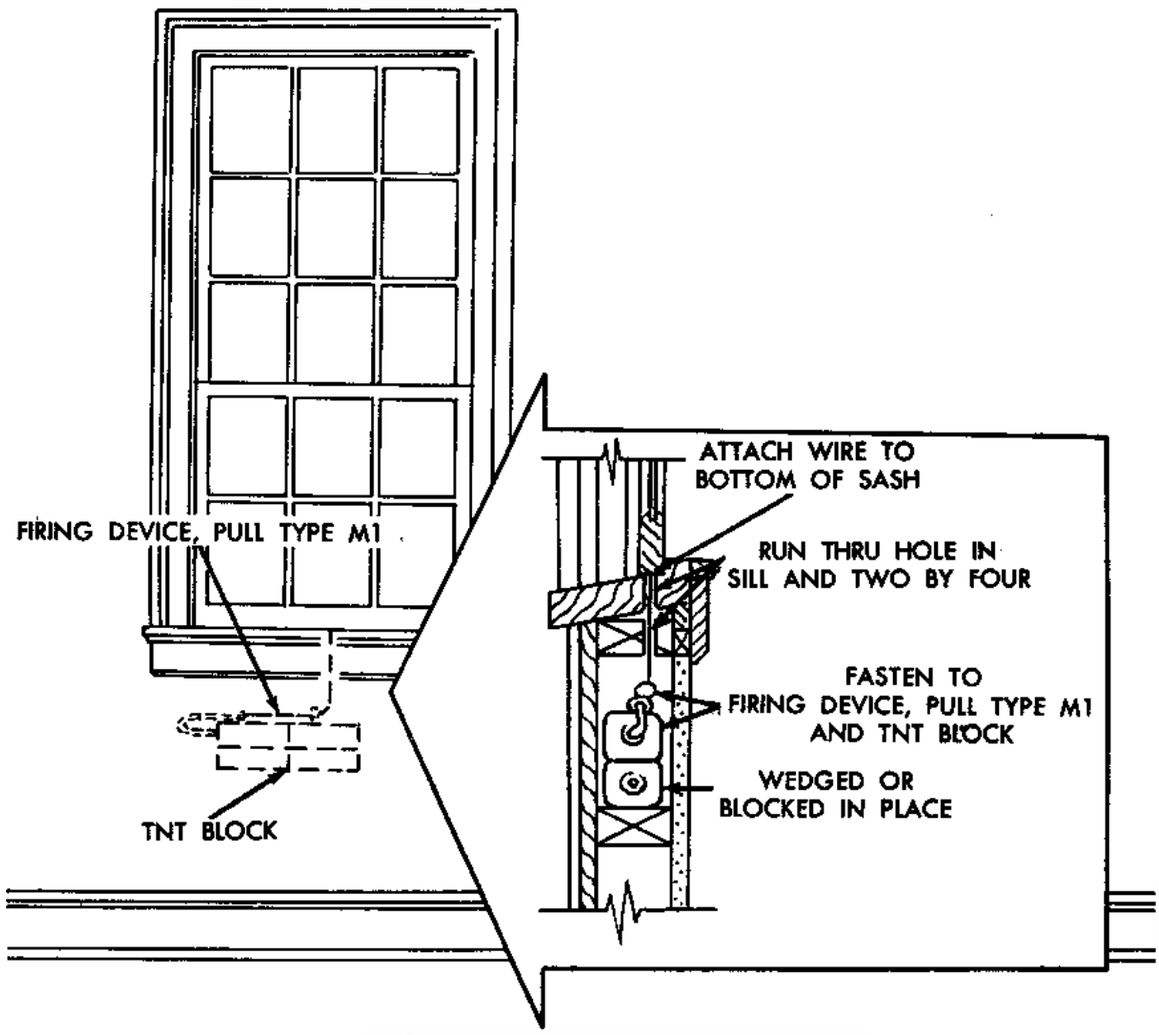

FIRING DEVICE, PULL TYPE M1
TNT BLOCK
ATTACH WIRE TO BOTTOM OF SASH
RUN THRU HOLE IN SILL AND TWO BY FOUR
FASTEN TO FIRING DEVICE, PULL TYPE M1 AND TNT BLOCK
WEDGED OR BLOCKED IN PLACE

Figure 82. Another type of window trap.

Figure 83. Boobytrapping a wall.

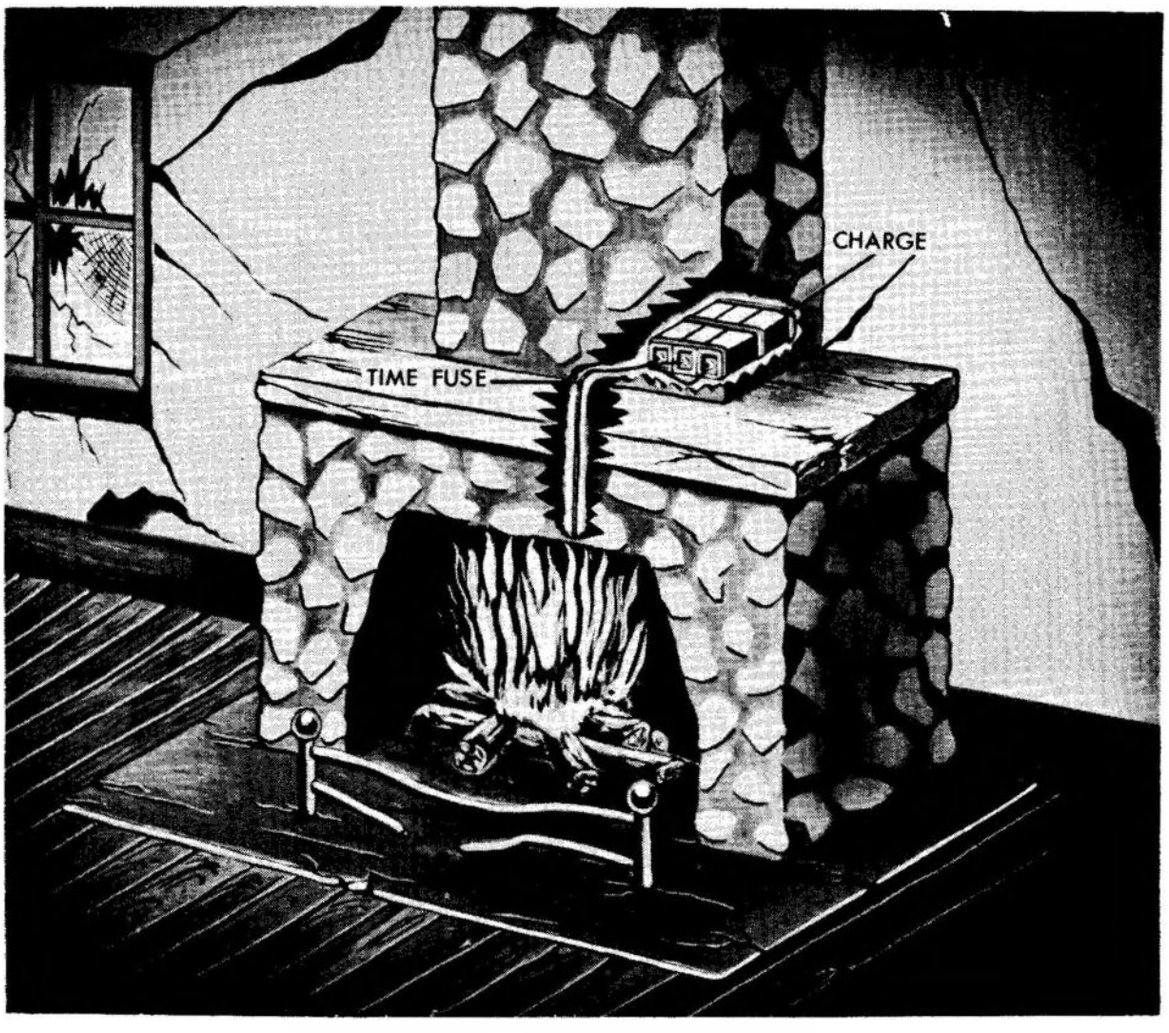


Figure 84. Fireplace boobytrap.

Section II. EQUIPMENT

76. Furniture

a. When items of furniture are left behind that may serve a useful purpose, a boobytrap should be emplaced to destroy the article as well as injure personnel. In the chair boobytrap shown in figure 1, this same idea is carried further. In this instance a charge of explosives is anchored to a beam below the floor. Its size can be made adequate to wreck a considerable portion of a building's structural framework.

b. The trap shown in figure 89 is simple, although a battery is required which sometimes may be difficult to provide. Similar results would be provided by a pressure-release firing device on the back of a tight-fitting drawer, or an anti-personnel mine M14 laid inside a drawer and wedged betwen the back of the drawer and a brace extending forward to the inside table top frame.

c. Means to provide illumination are easily converted into simple boobytraps. A small pellet of lead azide or tetryl stuffed in the top of an ordinary candle below the wick will detonate from the candle's flame. An ordinary kerosene lamp (fig. 90) or lantern

may also be boobytrapped in a manner difficult to detect by filling with high octane gasoline.

d. A bed will always appeal to a tired soldier. When springs or a mattress are available, boobytrapping is a simple matter (fig. 91). An ordinary cot can be boobytrapped, however, like the chair in figure 1. An abandoned vehicle is an ideal spot for such a trap as illustrated in figure 92.

77. Utilities

a. When a building has the appearance of being equipped with electricity, someone, sooner or later, will try a switch. Even though electric lines in a house are dead, a switch or an electric circuit with several outlets may be used to attach boobytraps operating from batteries. When necessity demands, electrical devices adequate to trip a boobytrap can be made from pieces of a tin can, wood insulation, and a battery that will fire an electric cap (fig. 17).

Figure 85. Hidden danger.

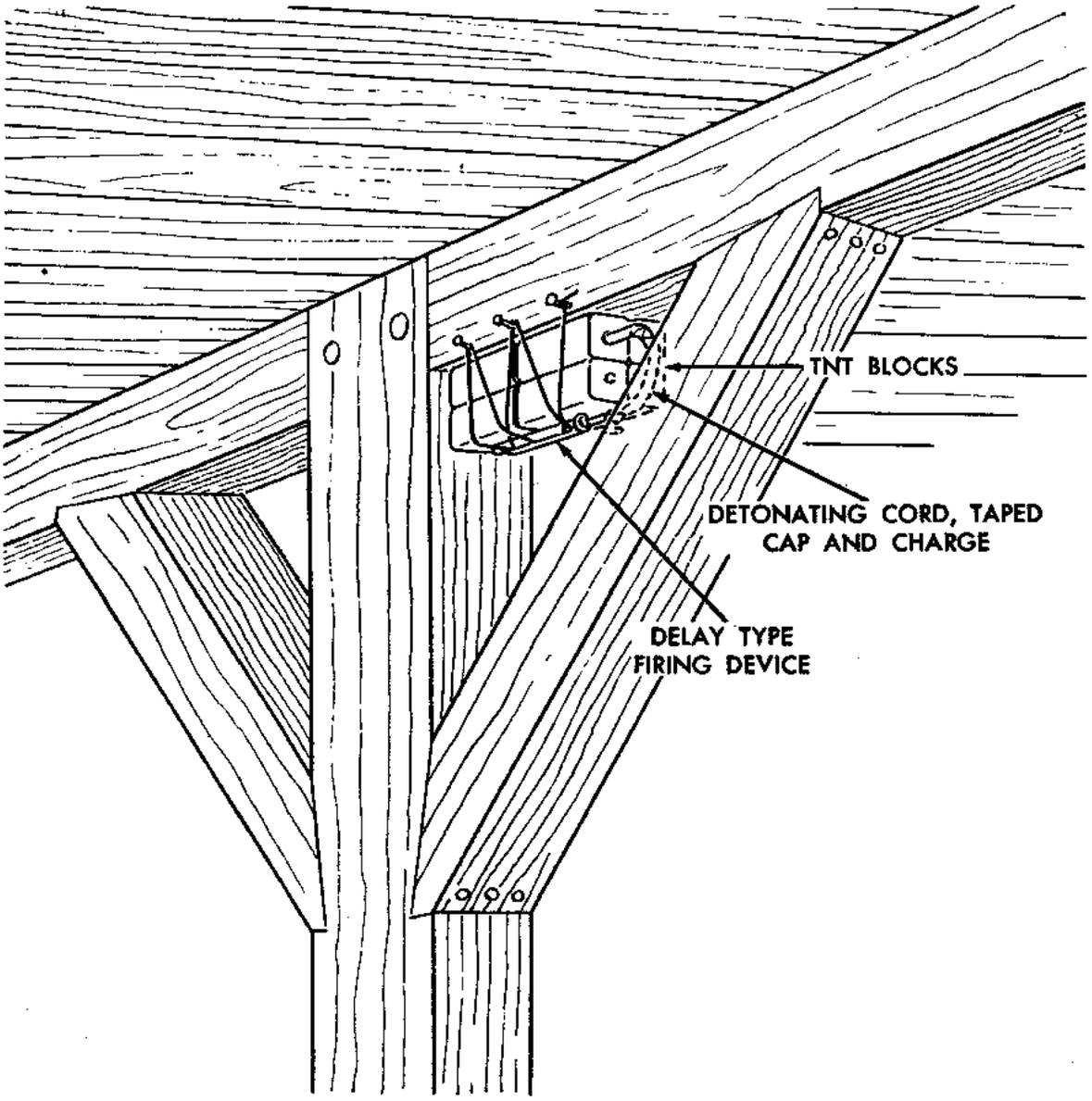


Figure 86. Mined beam.

b. Plumbing will rarely be available to boobytrap. Simulated plumbing fixtures from a junk pile, however, may be improvised to invite turning a tap with a trap rigged up to respond (fig. 93). Plumbing fixtures such as flushing levers and water closet tanks are ideal for boobytrapping.

78. Objects

a. A dwelling usually retains odds and ends thrown away or discarded by a hurriedly departing occupant. Salt shakers, food containers, other miscellaneous items used in eating, cooking utensils, and even an ordinary knife may be brought into good use (fig. 94). When booby-trapping a building, discard many useless items, scatter them about, boobytrap a few, and the arrangement will prove effective.

b. A telephone has been used as boobytrap bait (fig. 95). This illustrates how a simple instrument may be boobytrapped so that

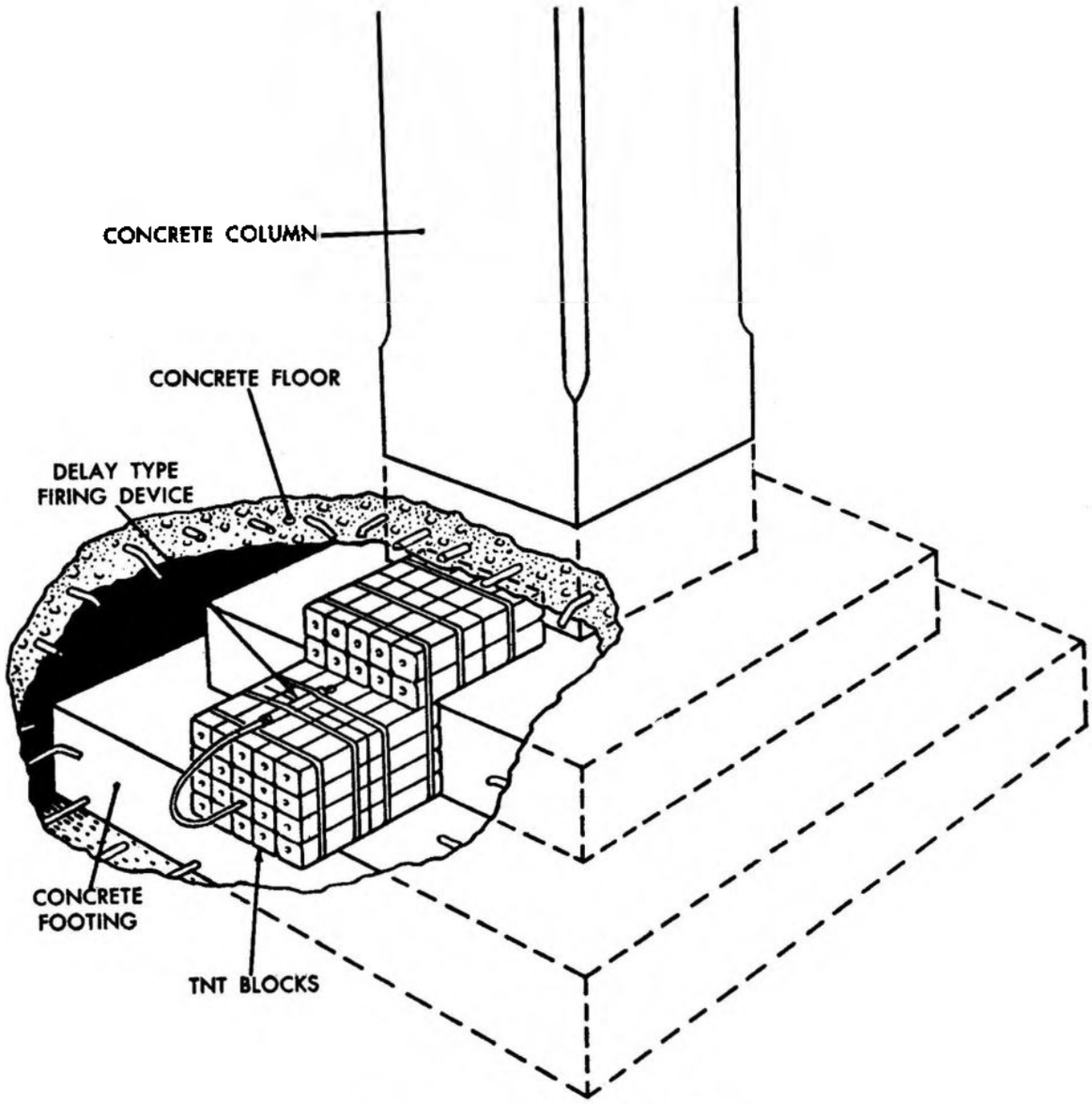


Figure 87. Mined column.

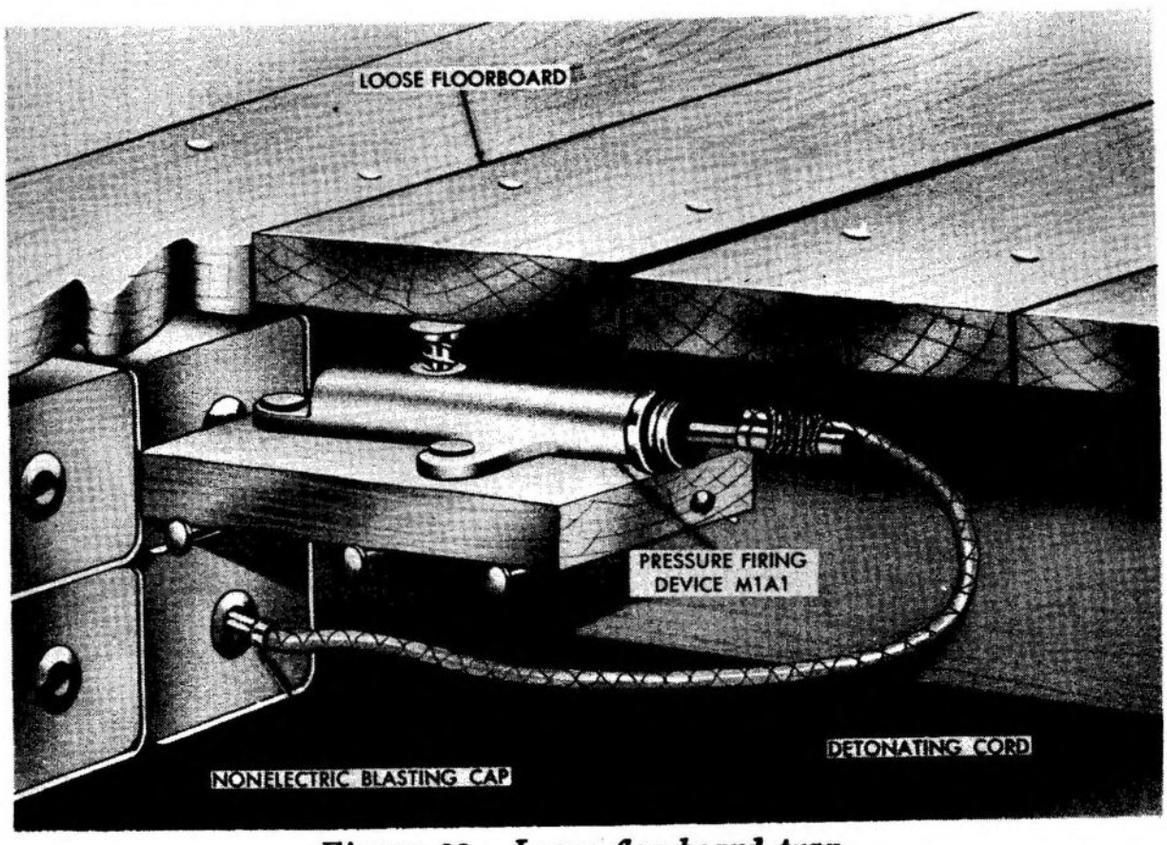


Figure 88. Loose floorboard trap.

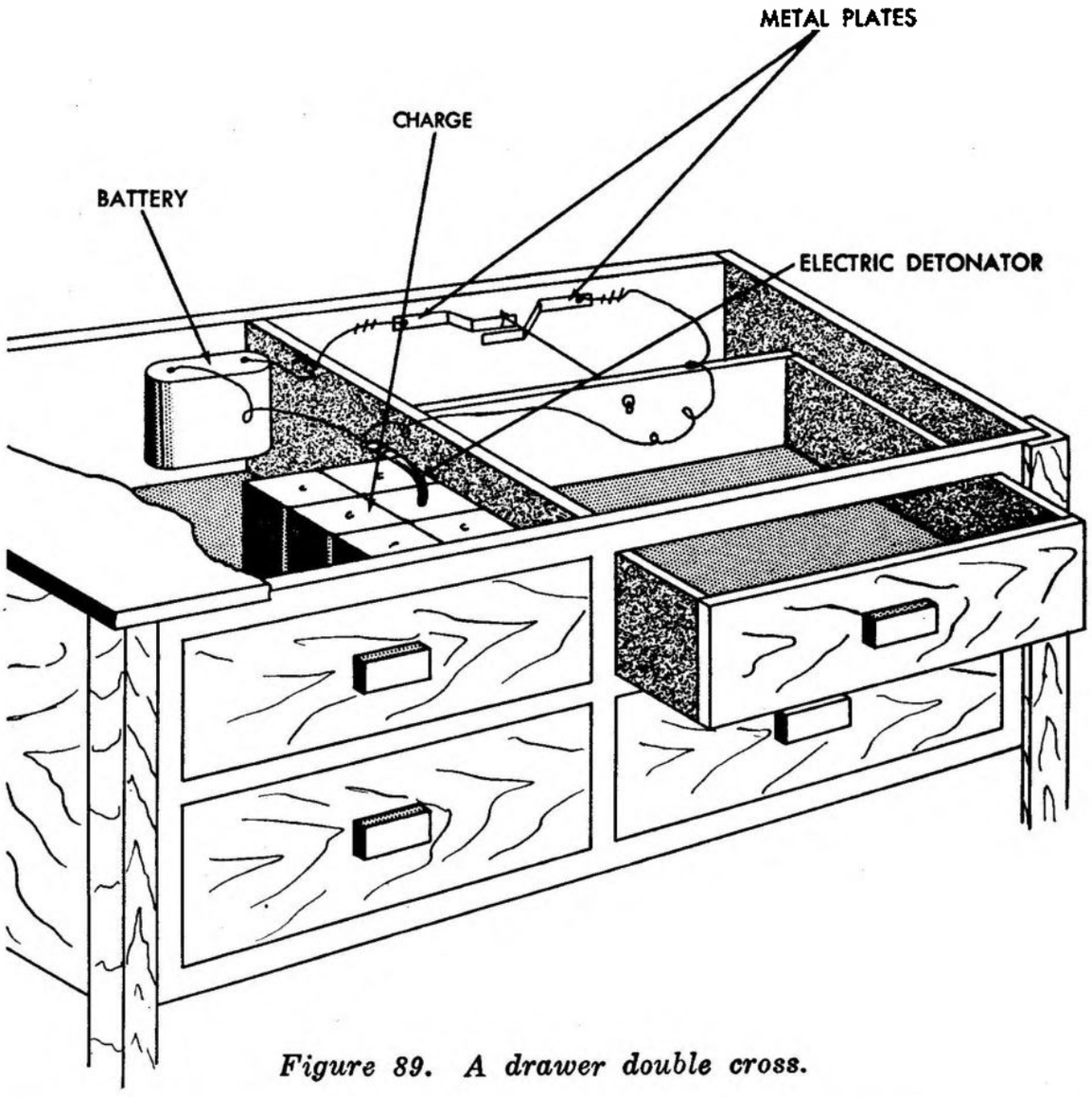


Figure 89. A drawer double cross.

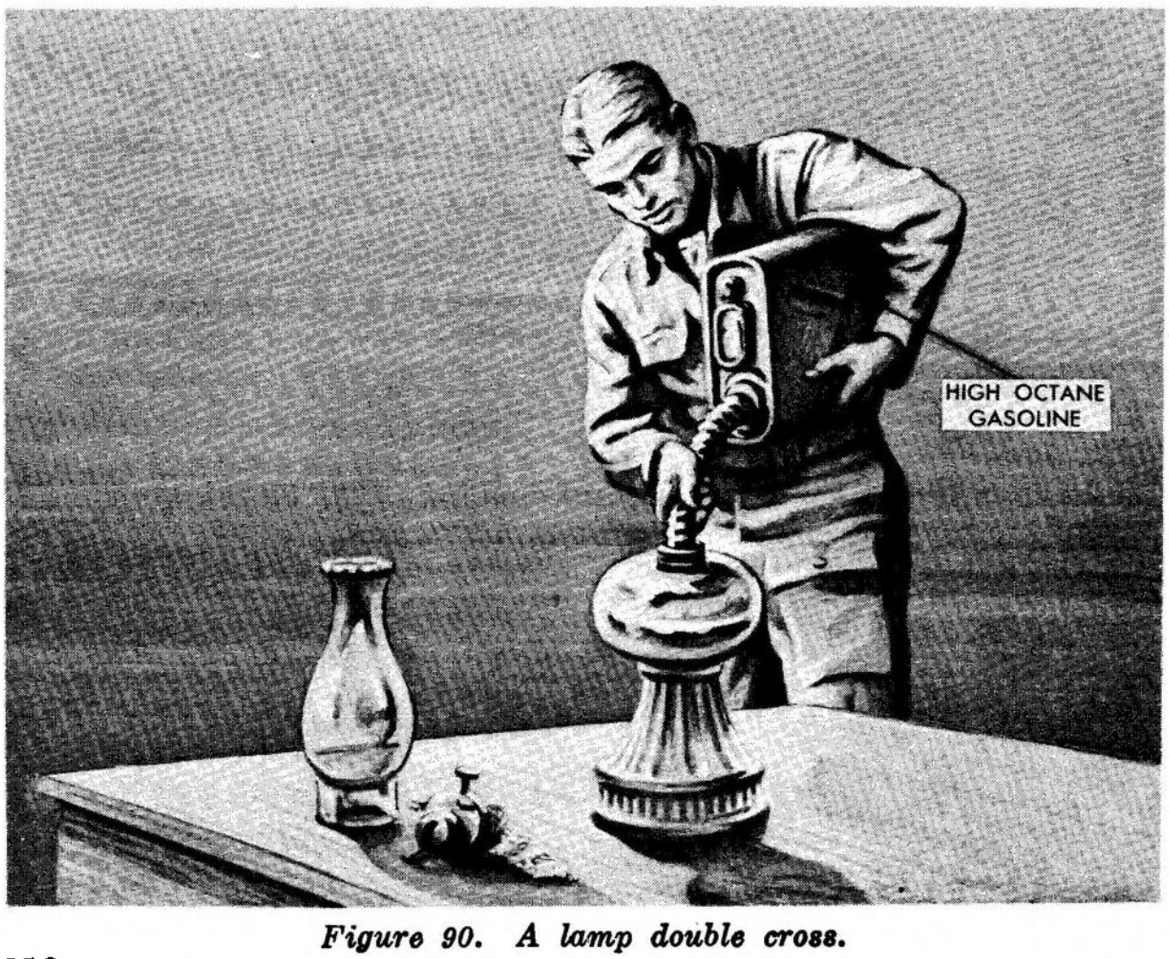


Figure 90. A lamp double cross.

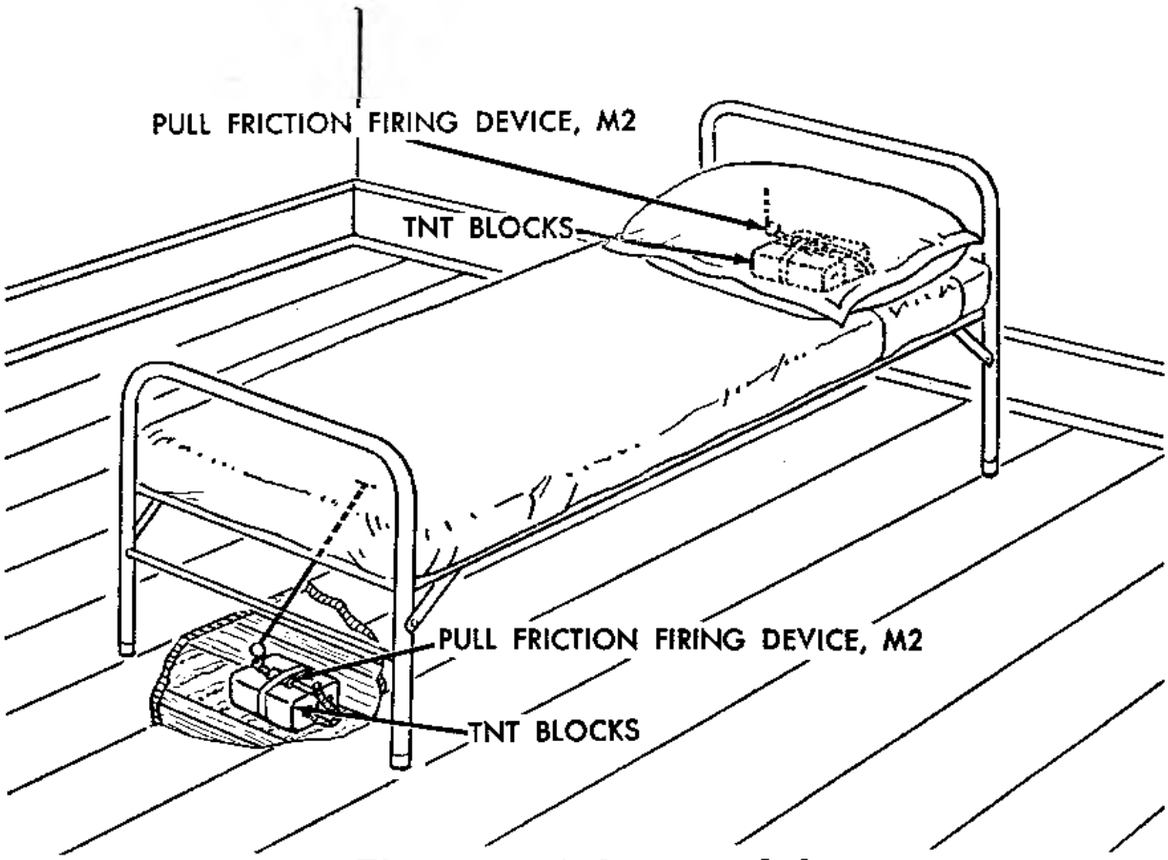


Figure 91. A dangerous bed.

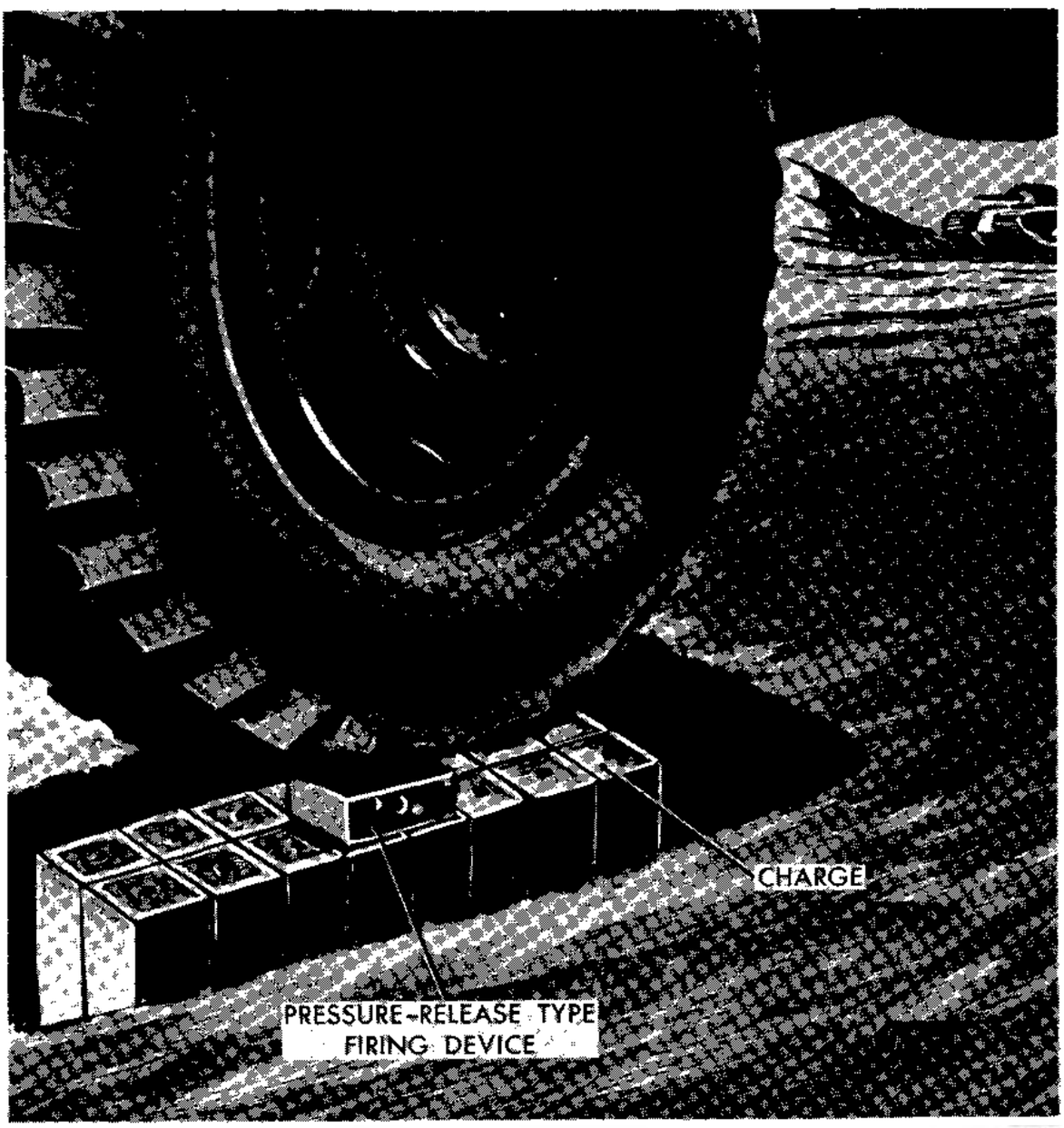


Figure 92. Ready to go.

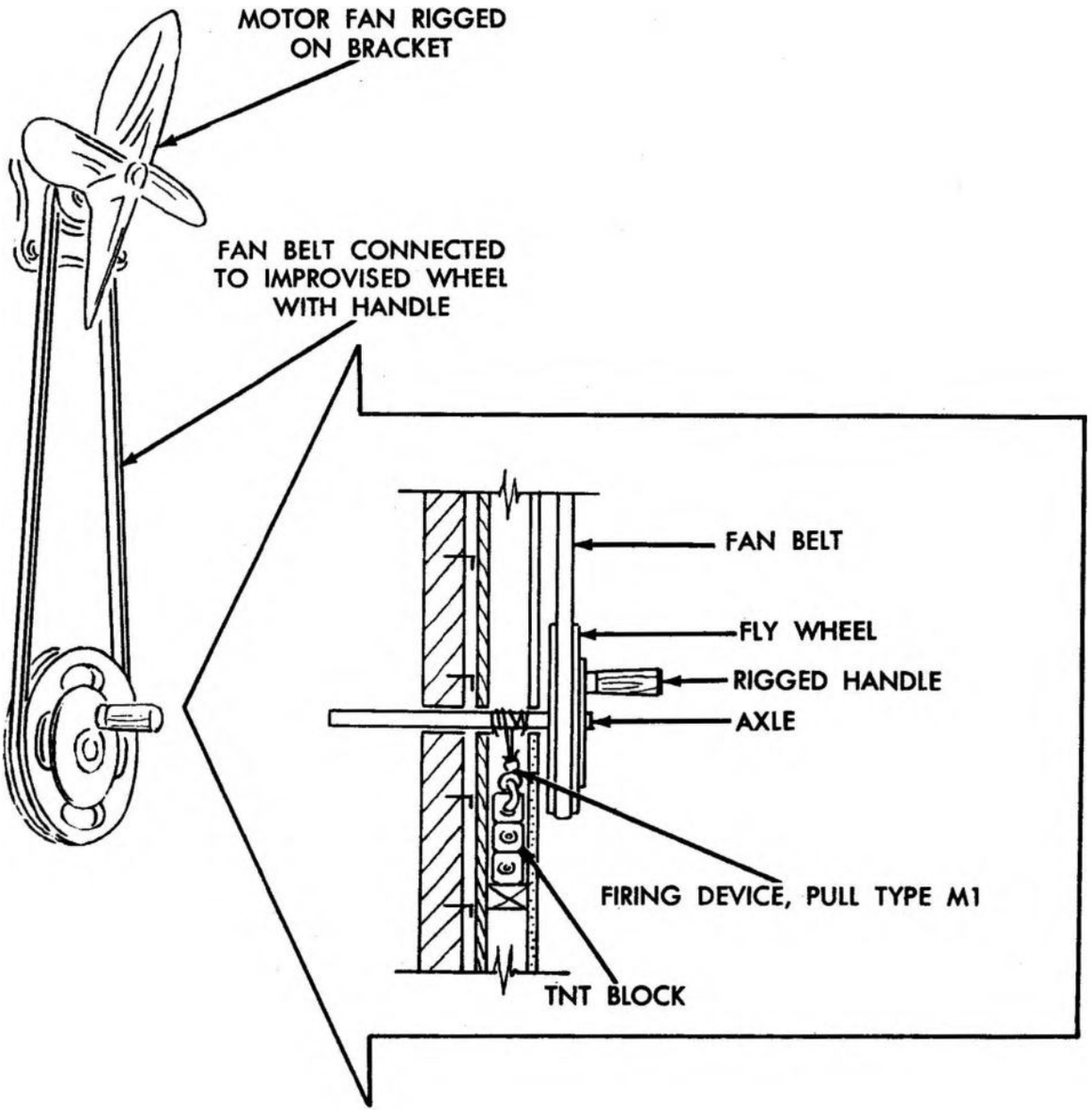


Figure 93. A "Whatzis" trap.

detection is most difficult. This is also an illustration of a complicated and time-consuming design that could be fashioned only when ample time and special equipment are available.

c. In cold weather, sources of heat are likely places for booby-traps. Men harried by cold will become careless in searching for warmth. A kitchen stove boobytrapped in Soviet style is shown in figure 96. When there are no outside means of access to the inside of a stove except a door, detection of an inside trap is practically impossible. Use a pull-firing device that requires but little travel to get best results.

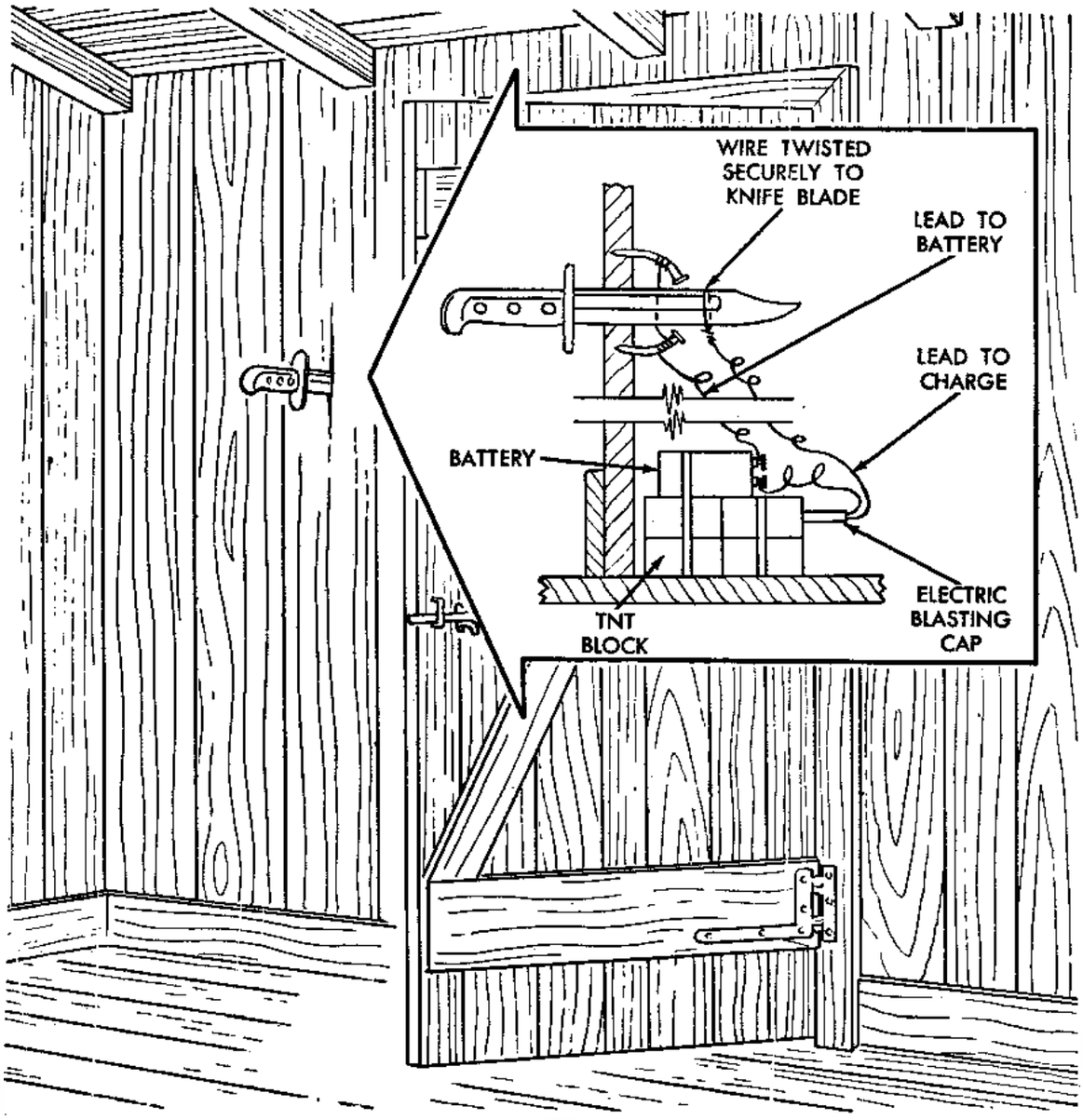


Figure 94. Boobytrapped knife.

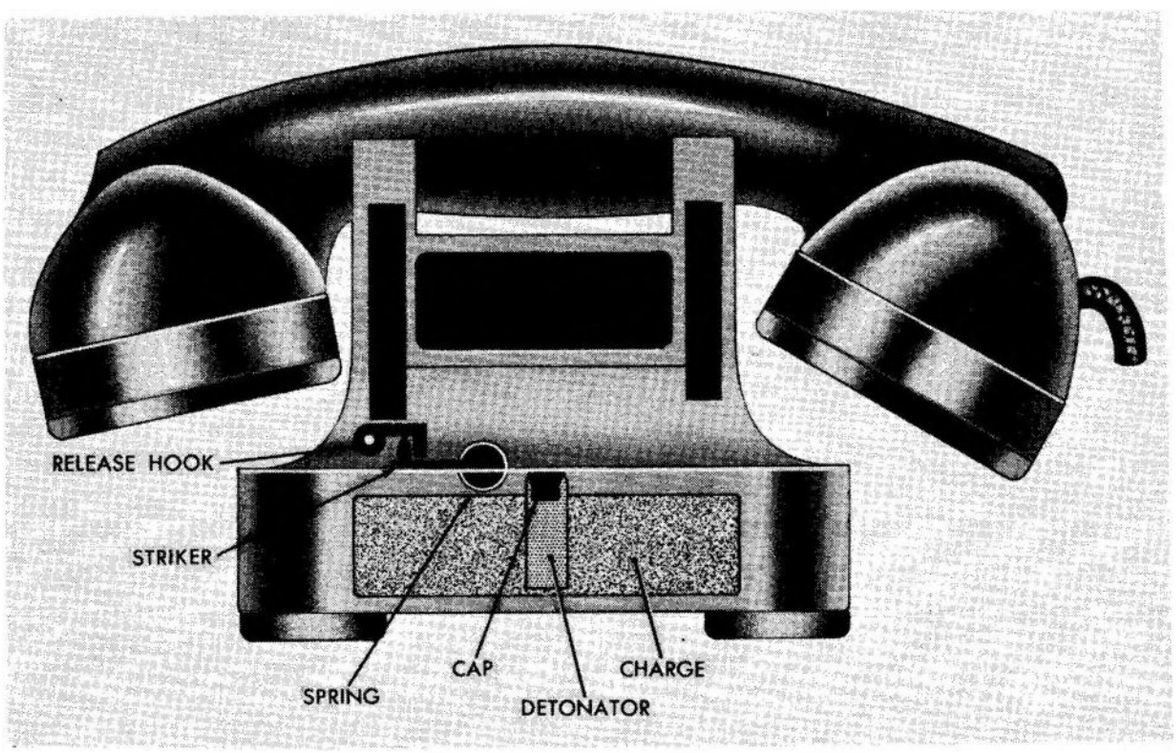


Figure 95. Telephone boobytrap.

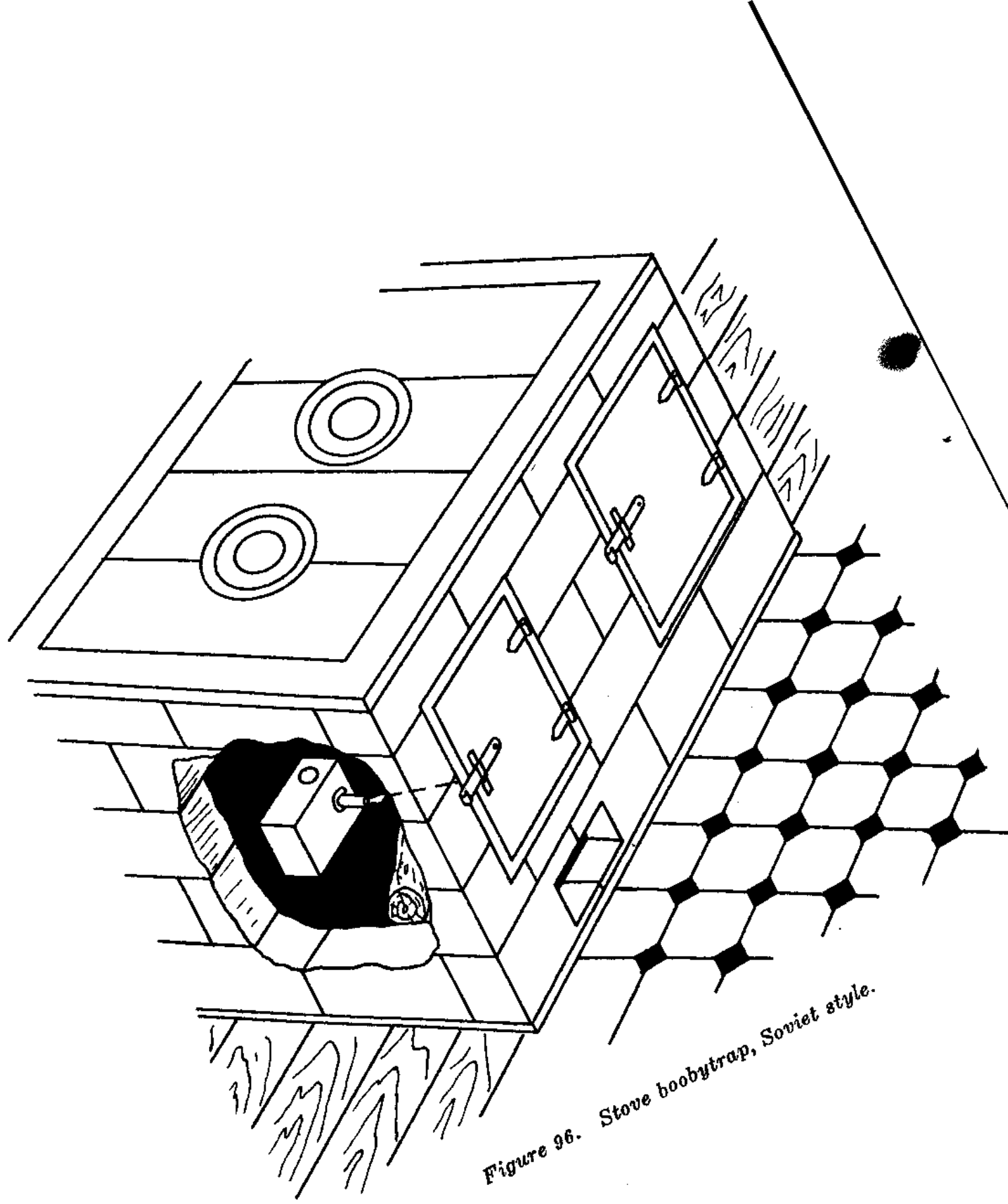


Figure 96. Stove boobytrap, Soviet style.

CHAPTER 10

BOOBYTRAPPING TERRAIN

Section I. HIGHWAYS, TRAILS, AND PATHS

79. Tactical Importance

a. Use of vehicles in warfare is constantly increasing. Traffic over roads in a combat area must be heavy to sustain an advancing army. Every act that can be brought to bear in slowing down such traffic must be used in defense. Boobytraps used in conjunction with other road obstructions can help retard traffic.

b. Trails and paths offer excellent locations for boobytraps. They are especially effective against raiding parties that must of necessity follow certain routes during hours of darkness. Paths through Burmese jungles were extensively boobytrapped by Japanese forces to prevent infiltration through thinly guarded areas. Signaling devices may be used to provide warning of enemy scouting activities.

80. Types

a. Boobytraps may be concealed along the shoulder of a road on the enemy side of an obstruction. Use a type likely to be brushed aside by a careless or hurried passerby (fig. 97). When an obstruction is heavy, requiring force to clear an area, boobytraps concealed below the obstacle will increase the effectiveness of obstruction (fig. 98). Fragmentation charges provide the greatest antipersonnel effectiveness for such boobytraps.

b. Whether mines or boobytraps are used, employment of concealed explosives to trap the unwary, hurried, or careless driver of a vehicle is good strategy. Select sites where vehicles will be exposed to enemy fire, where haste in passing will be paramount in a driver's mind (fig. 99).

c. Small boobytraps, strategically placed, can delay enemy traffic. Figure 100 illustrates a simple method. A nest of TNT blocks is buried in a roadbed with an attached pull friction firing device secured to a limb thrown across a wheel rut or trail. Pull on limb will detonate charge.

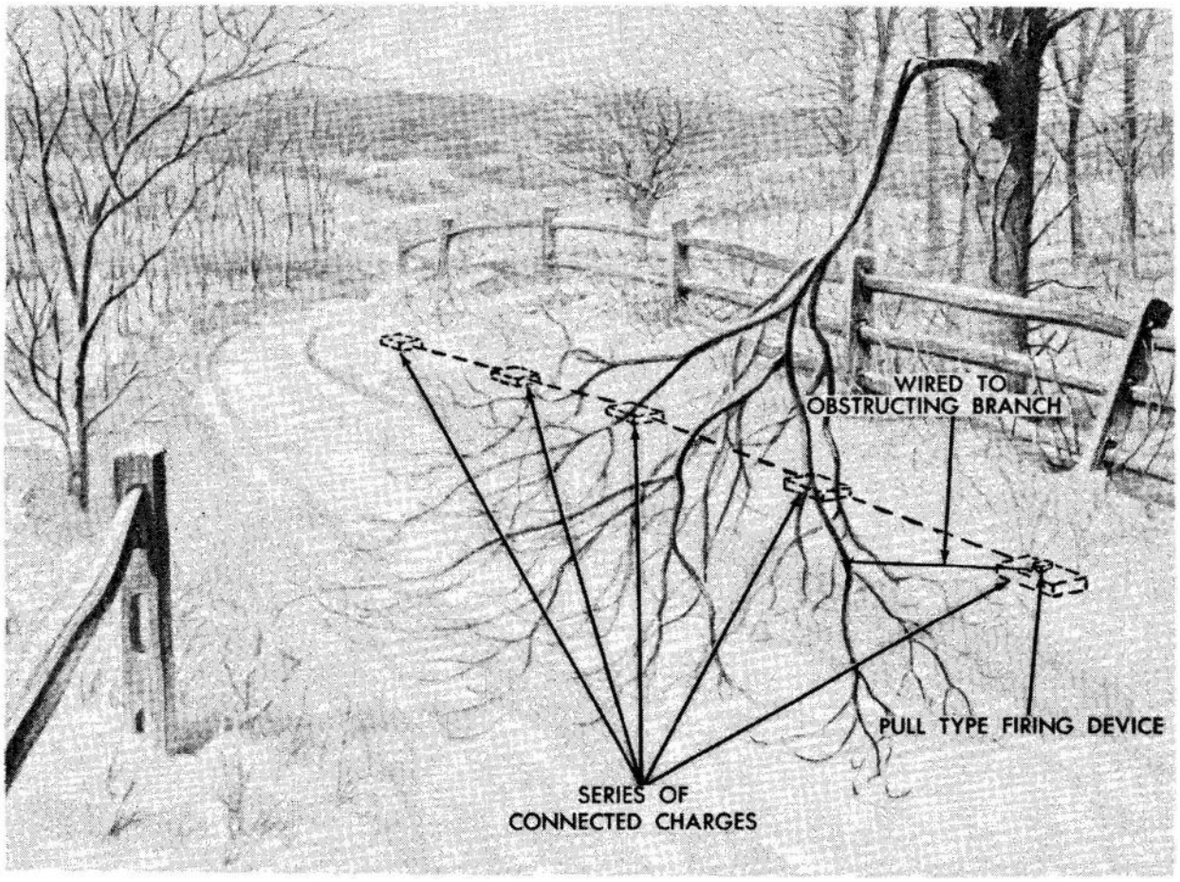


Figure 97. Roadside boobytraps.

d. Boobytraps used in regions where heavy cover exists, such as wooded areas, swamps ,and jungles, should include many different kinds. Rocks that obstruct a path and which may be moved without much effort may conceal a simple trap (fig. 101). Rocky ledges along narrow paths offer many locations for boobytraps capable of starting a landslide or blockading a trail (fig. 102). Overhanging branches, vines, and trunks of trees frequently provide suitable locations for boobytrap charges that will deliver an

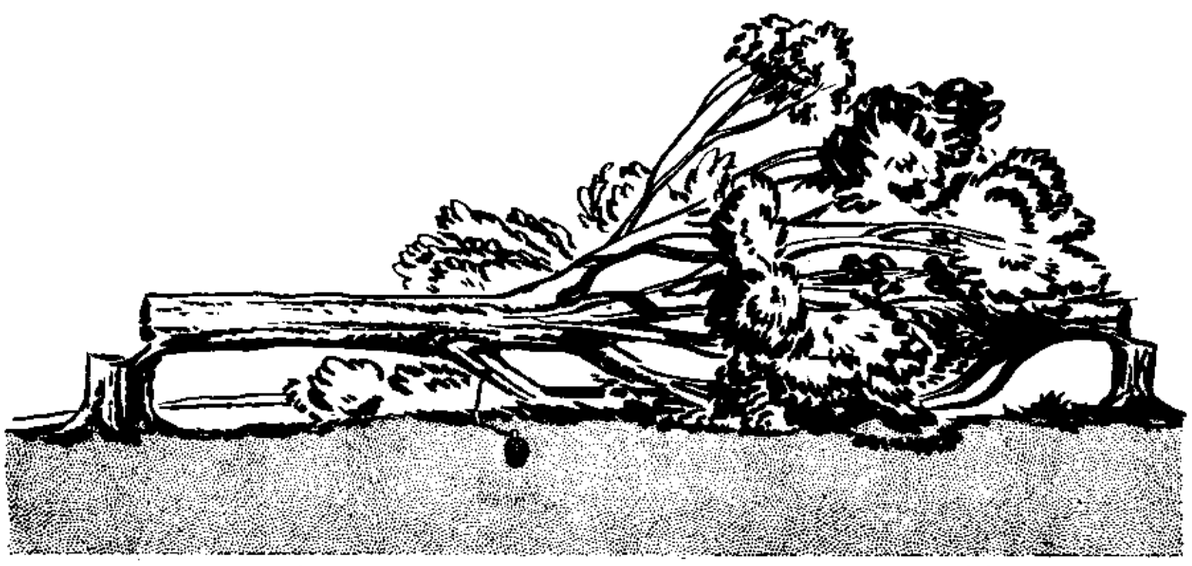


Figure 98. Obstacle boobytrap.

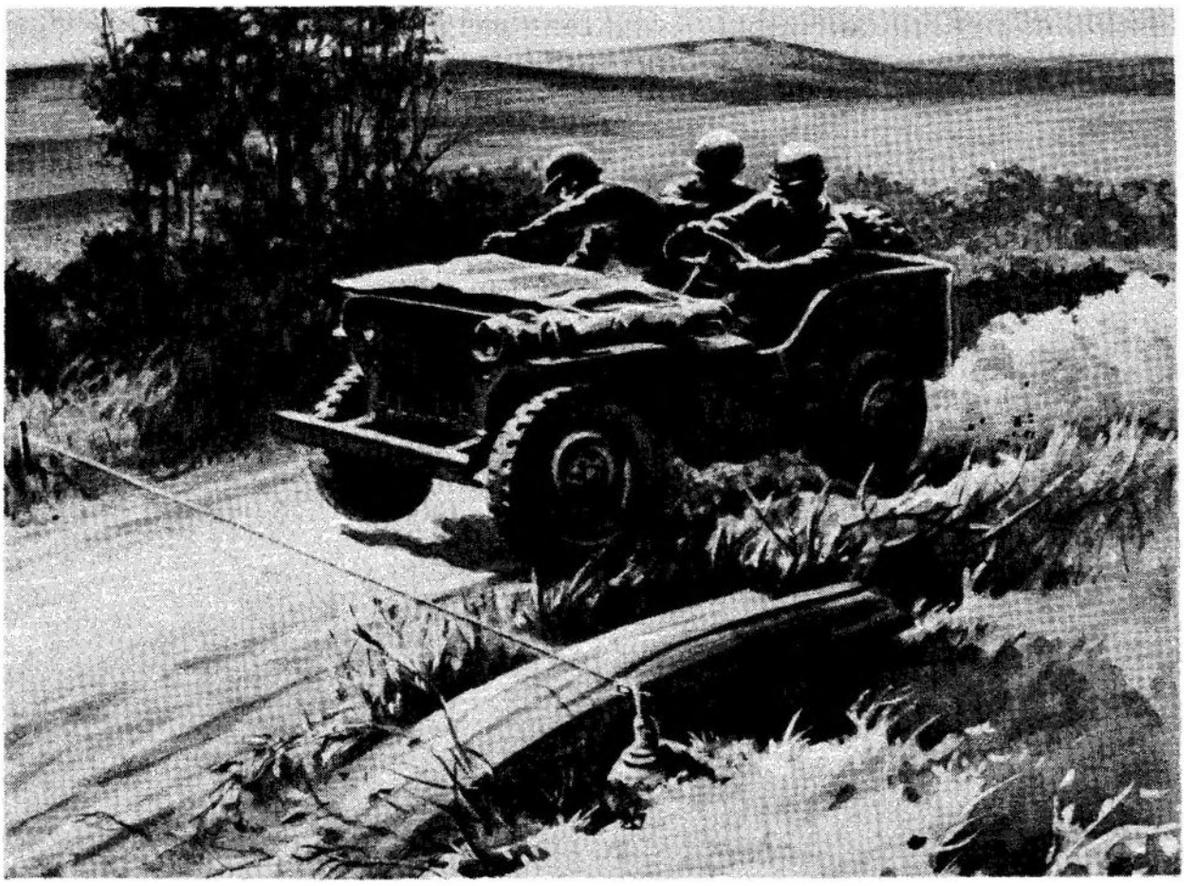


Figure 99. Watch the road ahead.

air burst (fig. 103). Always select a triggering device of the type that will be disturbed as a natural act by a hurried passerby.

e. Triggering mechanisms may be found in abundance. Vines may conceal a trip-wire many feet away from a victim. Medium

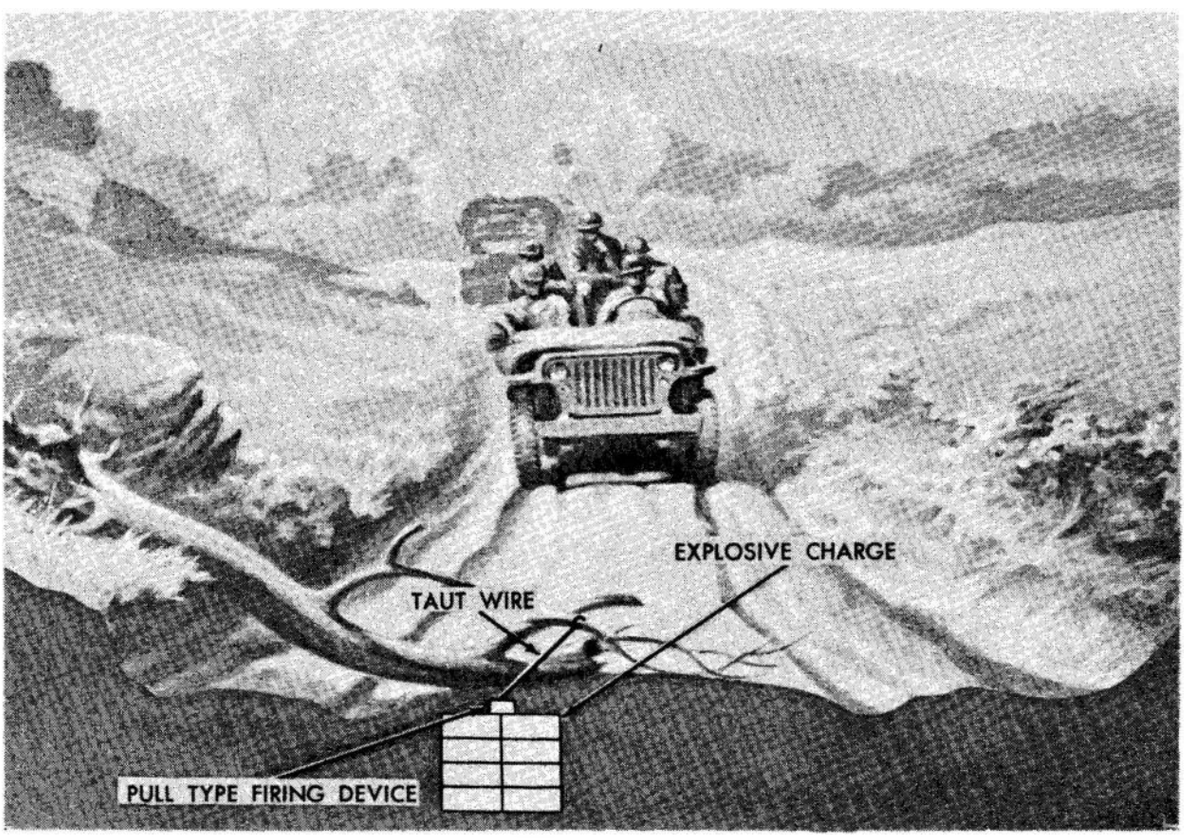


Figure 100. Wheel-track boobytraps.

sized stones in a path may cover a pressure-release firing device. Discovery of many fake trip-wires or poorly concealed boobytraps may annoy the average soldier to the point of developing recklessness. An obvious hoax may decoy a victim into a real trap (fig. 104).

Section II. SPECIAL AREAS

81. Tactical Importance

a. Whenever a retrograde movement is hurried, items are left behind because time or available transportation is inadequate. Abandoned serviceable equipment or repairable material may be picked up by an enemy for his own use. This is especially true of food, ammunition, weapons, and vehicles.

b. Time may permit complete destruction of such abandoned items but even where objects have been demolished, enemy scav-

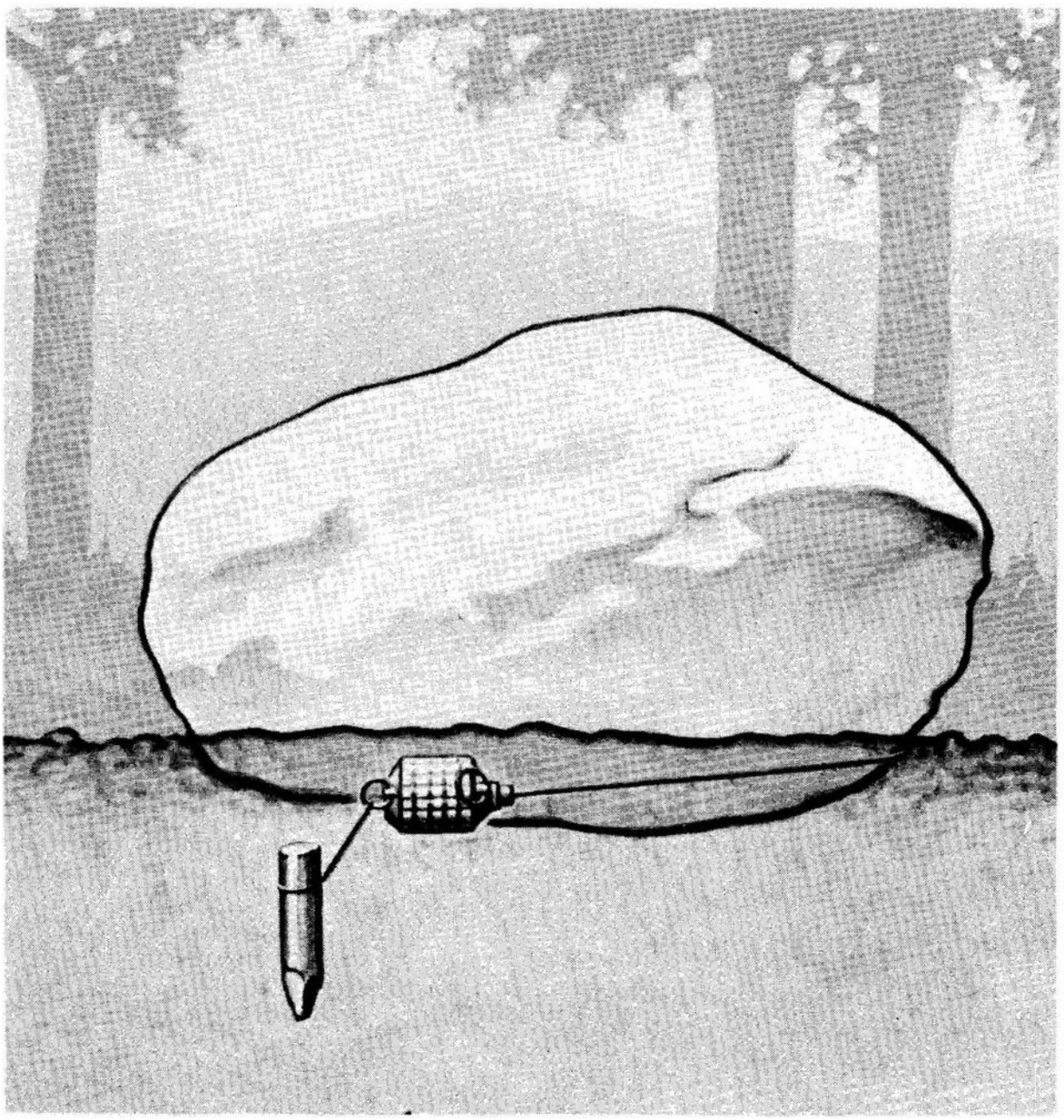


Figure 101. Clearing operations become dangerous.

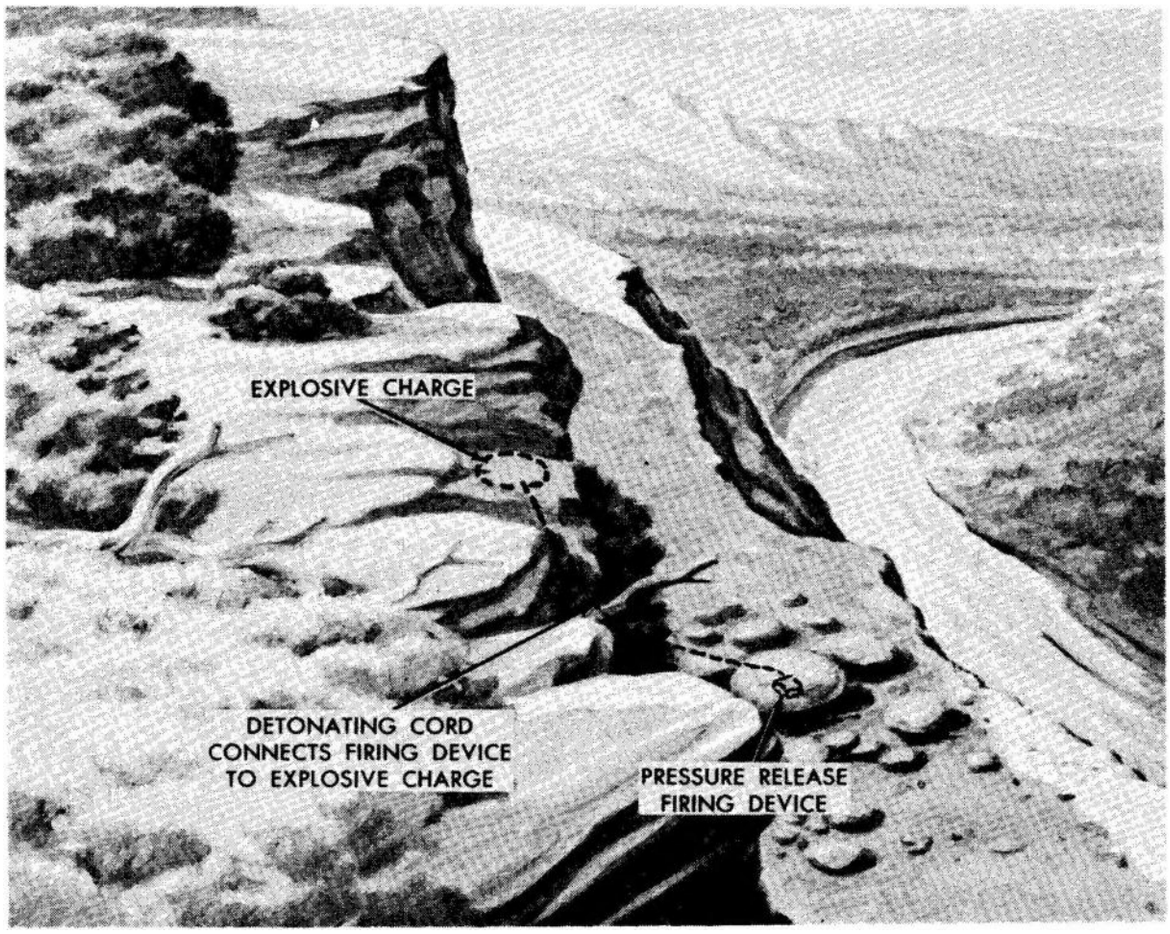


Figure 102. Charge concealed within rocky ledge along trail.

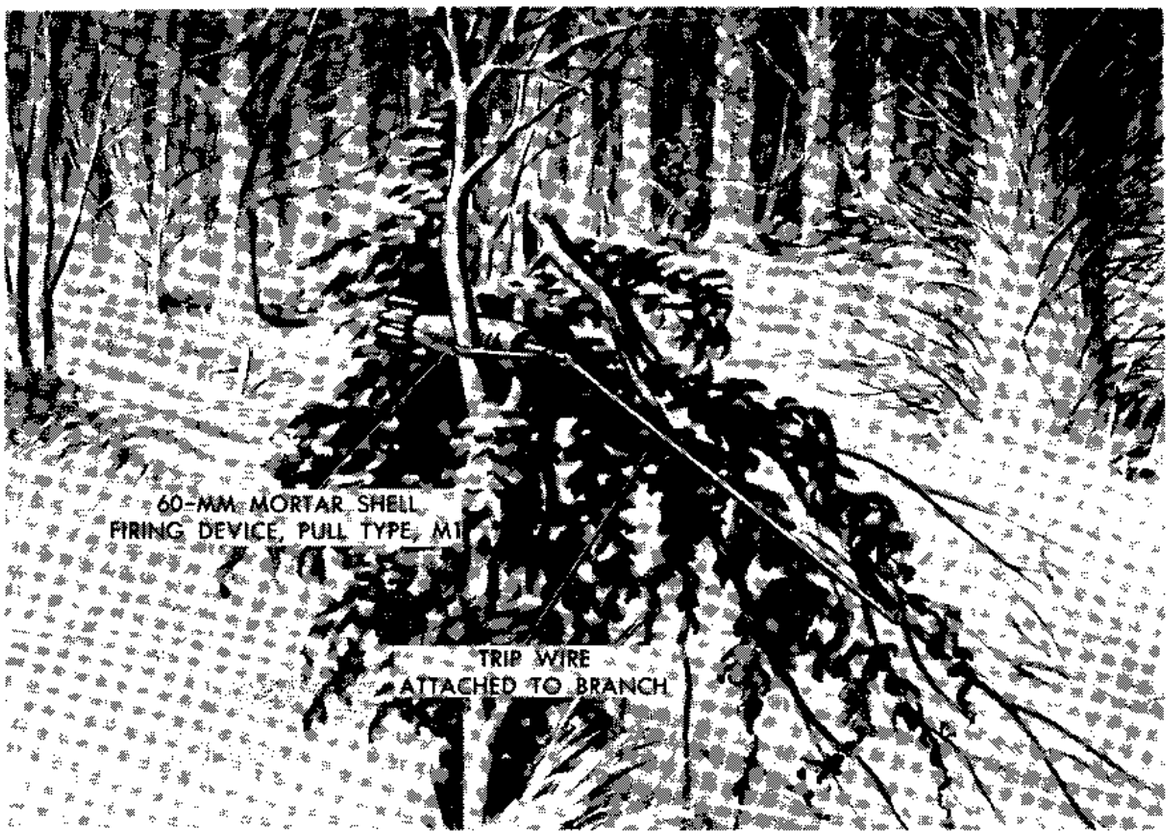


Figure 103. Suspended tree trap.

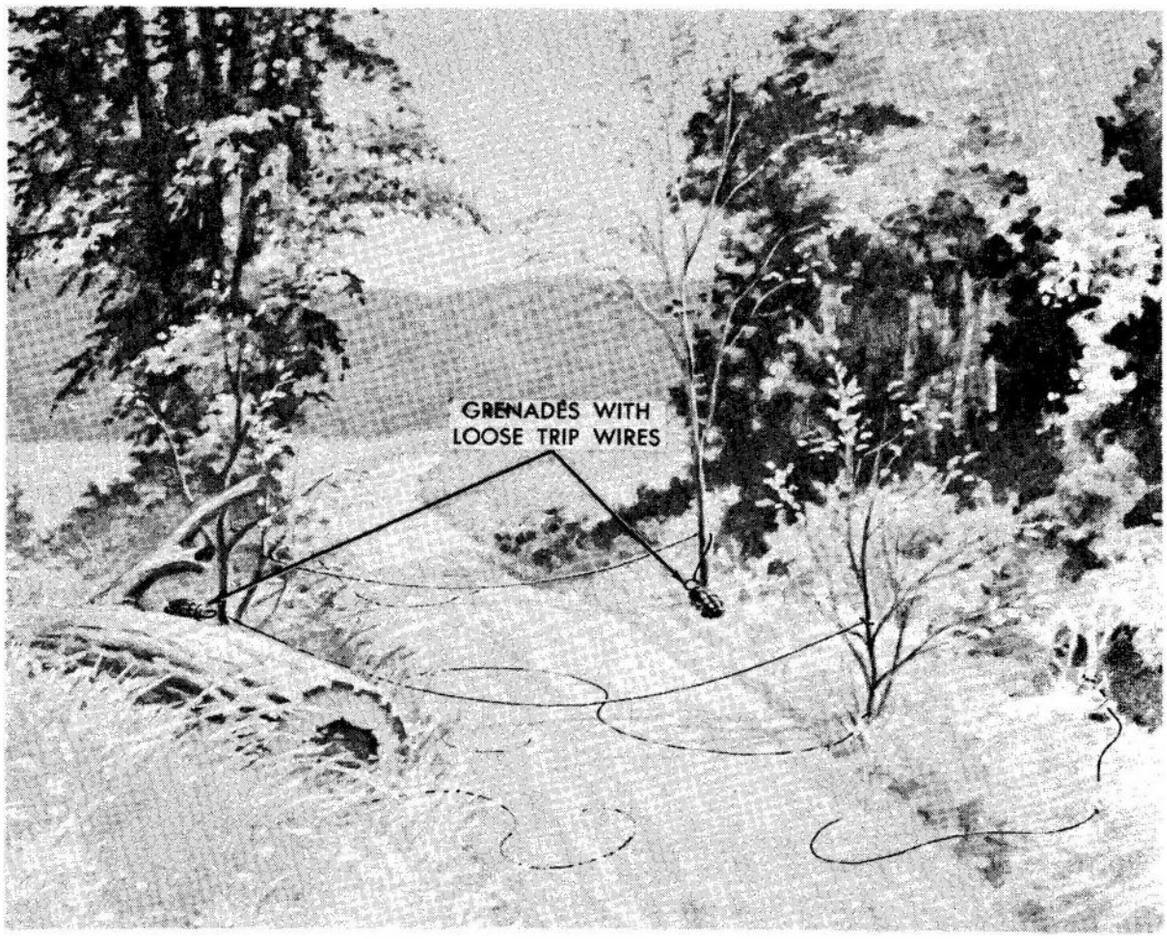


Figure 104. False leads.

engers will be searching for useful things. This search may be disastrously interrupted by many well-placed boobytraps (fig. 37).

c. Some supplies practically defy destruction and may serve a better purpose as concealment for boobytraps. Scrap yards, lumber piles, and similar installations around a shop area are certain to draw the attention of greedy and curious soldiers. Pull and pressure-release devices may be inserted quickly in many unexpected places. Unusual locations for boobytraps may be discovered by studying combat tactics covered in FM 31–50.

82. Methods

a. Almost any kind of boobytrap is suitable for use. Ammunition that is being abandoned, however, should be employed to a maximum. Chain detonations using bangalore torpedoes and connected mines are also useful to spread disaster throughout an ammunition dump, a camp site, or a shop area.

b. It should be constantly borne in mind that first consideration must always be given to the destruction of all useful property that

is to be abandoned to an enemy. Even though destruction has been provided, boobytraps can be used to advantage. Disorder resulting from destruction provides many boobytrap sites. Boobytraps that function in ammunition dumps will spread havoc far more than that normally obtainable from a single charge (fig. 105). The use of fire-producing chemicals placed adjacent to boobytraps will be found most effective.

c. In storage areas where materials cannot be removed or destroyed, boobytraps may be used effectively. Figure 106 illustrates their use where stores are stocked in open storage, while figure 107 illustrates an effective trap to conceal in a lumber pile.

d. Whenever vehicles are abandoned to enemy possession, important parts should be removed or destroyed and first consideration given to rendering vehicles useless, but in addition, many places on such vehicles can be effectively boobytrapped. A simple seat trap using a pressure fuze (fig. 108) may be used. Rotating parts around an engine provide many parts to install tripping devices. Parts of an electrical or ignition system may also be used to detonate concealed explosive charges (fig. 109).

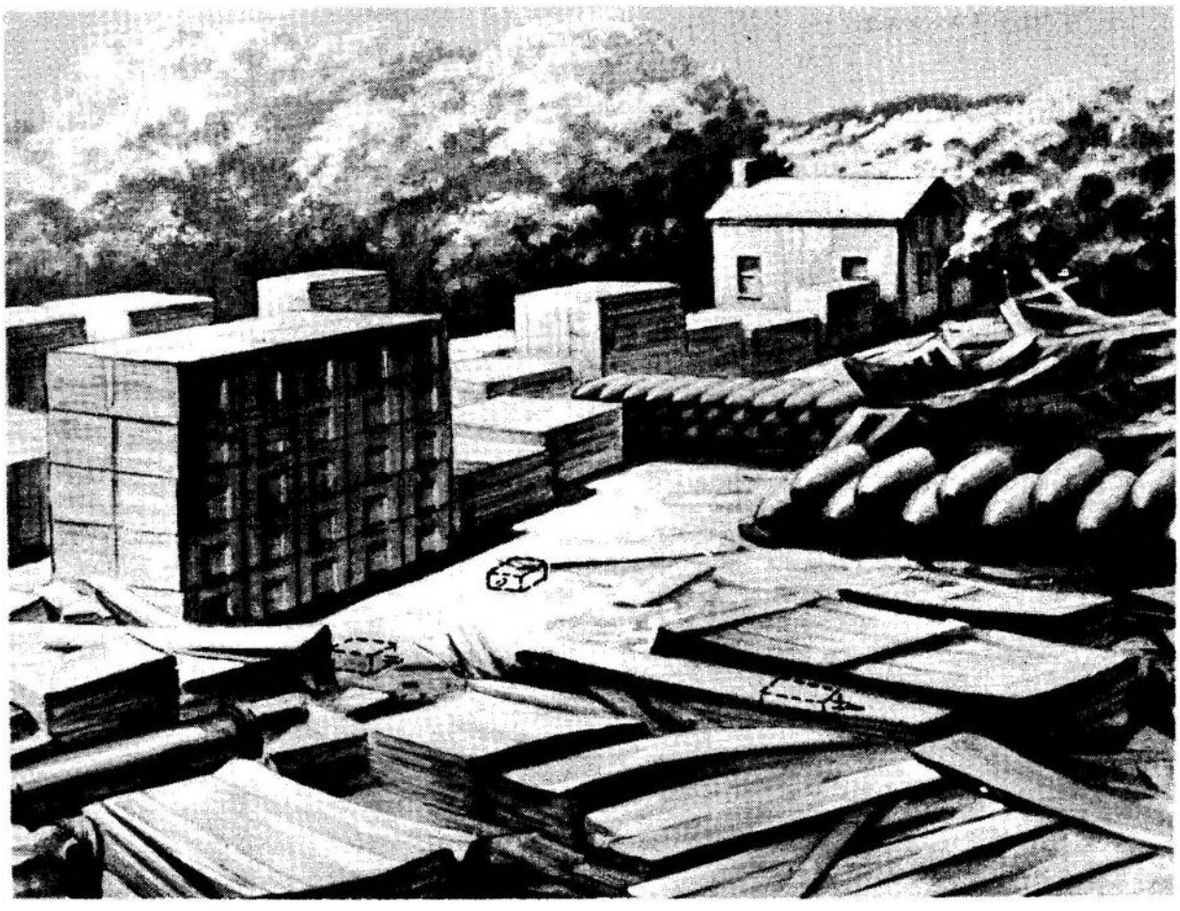


Figure 105. Boobytrapping an ammunition dump.

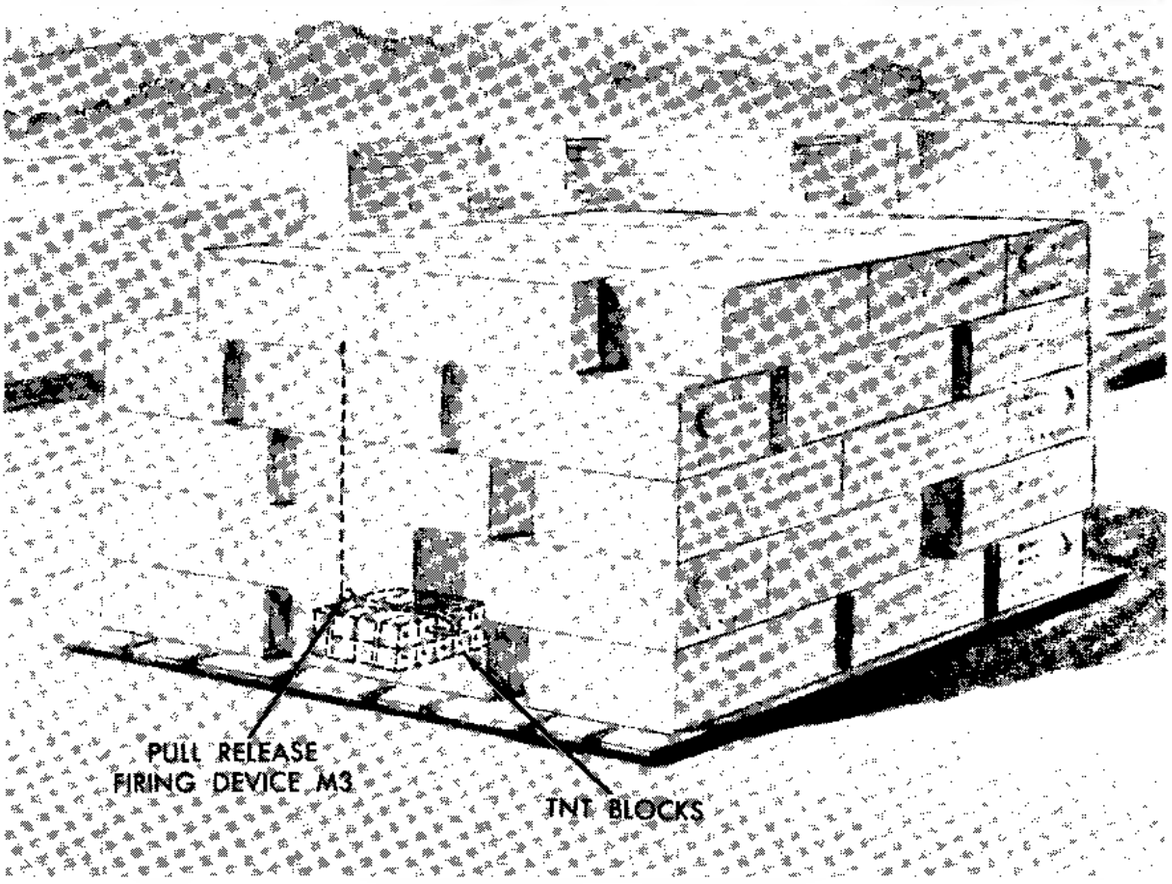


Figure 106. Stacking the deck.

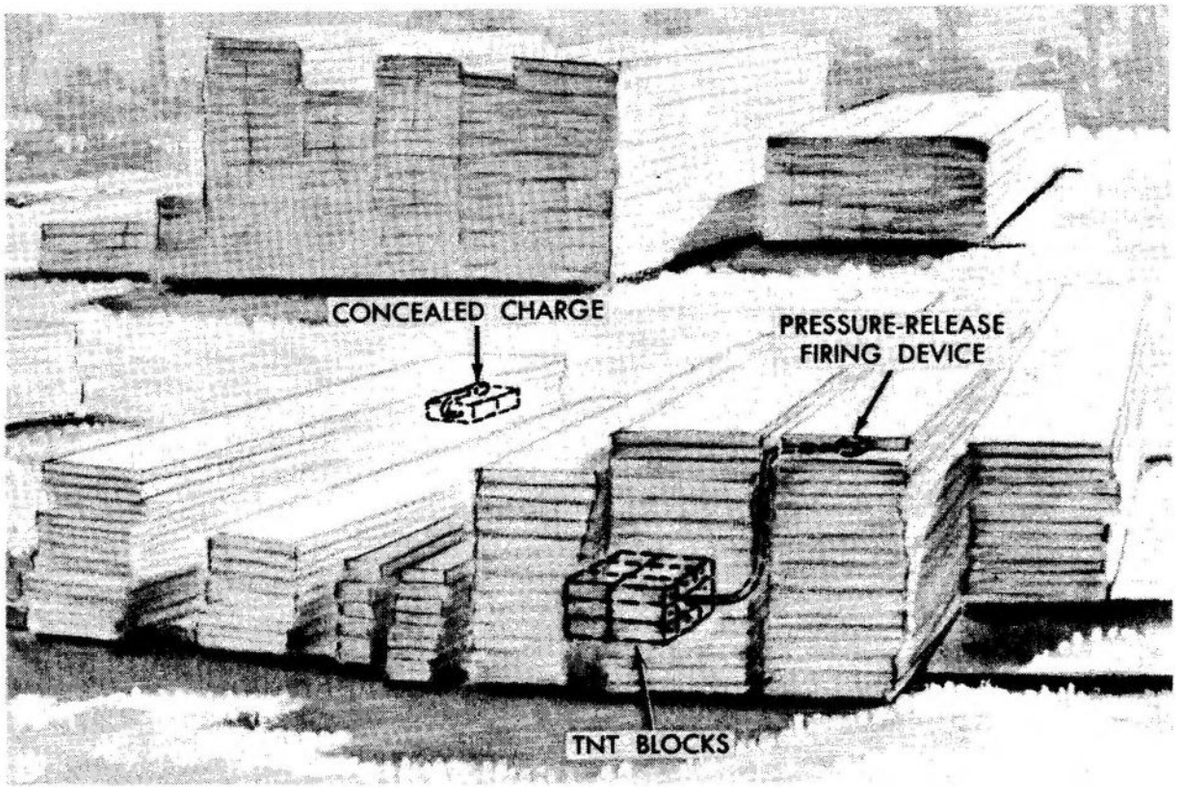


Figure 107. A lumber tosser.

PRESSURE TYPE
FIRING DEVICE
NONELECTRIC
BLASTING CAP
CHARGE
NOTE: A NONELECTRIC BLASTING CAP MUST BE CRIMPED ONTO THE EXPLOSIVE END OF THE DETONATING CORD ENTERING THE CHARGE
DETONATING CORD

Figure 108. Vehicle seat trap.

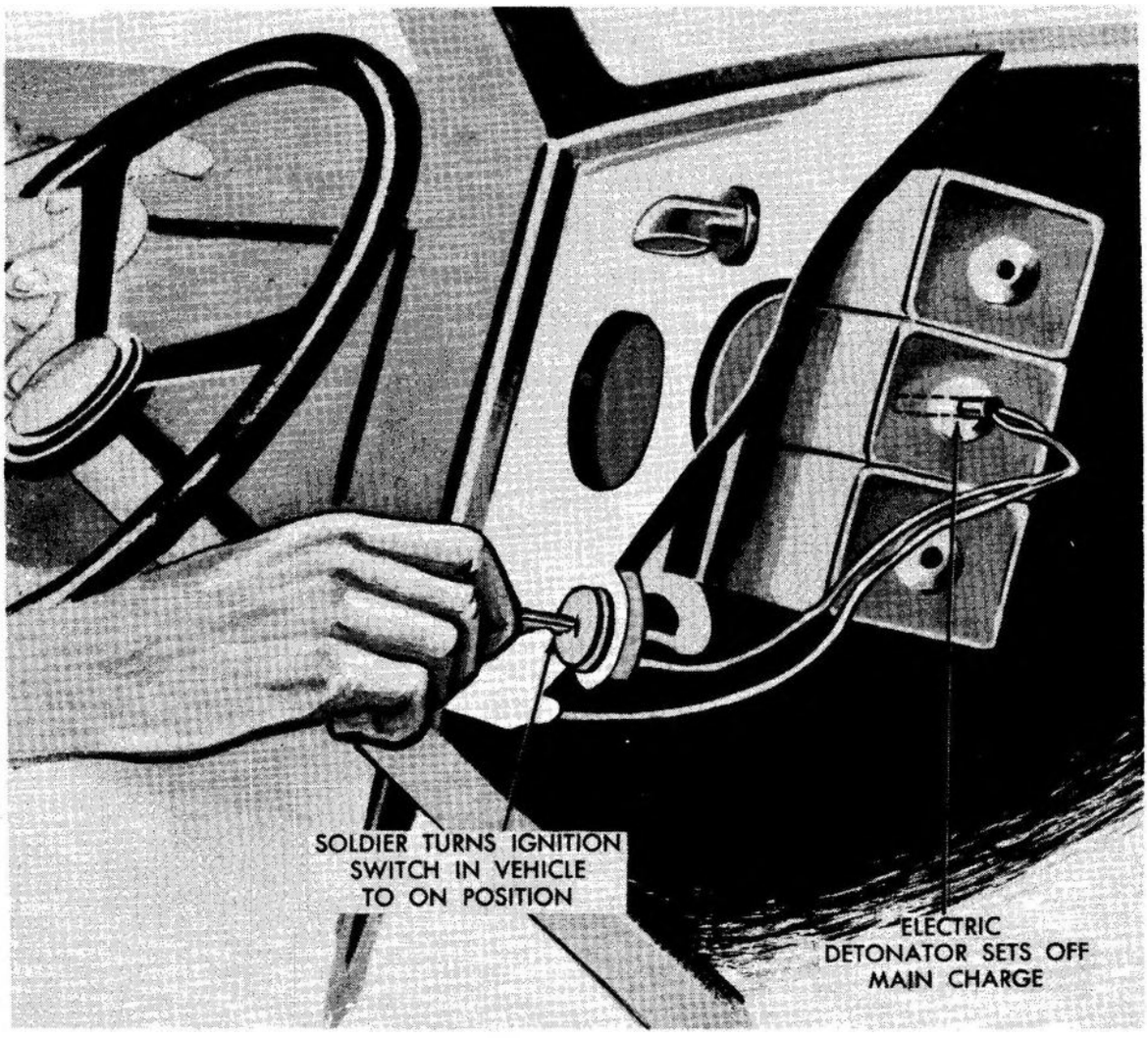


Figure 109. Ignition boobytrap.

CHAPTER 11

BOOBYTRAPPING OBJECTS

Section I. MANUFACTURED BOOBYTRAPS

83. Tactical Importance

a. Many boobytraps in the past have been manufactured in production plants for distribution in enemy-held territory. They were used by every major power during World War II.

b. These devices can be very effective although they will injure civilians as well as soldiers. Made up to imitate a useful object, they may respond by maiming or killing an unsuspecting individual who handles them. The havoc such practices may create can be realized through a single illustration. Should an occasional lump of coal picked up by an enemy explode with violence when subjected to burning, enemy forces would soon become suspicious and uneasy around every coal fire.

c. Distribution behind enemy lines may be accomplished through free balloons or aircraft. Agents also may smuggle and distribute such supplies into enemy-held territory. Combat soldiers may be issued such items for combat distribution in the path of an advancing enemy.

d. No examples of American stock items will be illustrated in this manual. The very nature of their use necessitates concealment of their identity whether or not such supplies are actually stocked for wartime employment. The fact that boobytraps of this kind have been used by potential enemies during and since World War II, justifies a presumption that, in any future conflict, such devices would be available to American forces for use in retaliation.

84. Design Characteristics

a. Manufactured boobytraps vary greatly in design features, explosive content, and effectiveness. Since disclosure of the nature of U.S. manufactured boobytraps would be unwise, a study of the M14 (fig. 110), smallest standard U.S. antipersonnel mine, may assist in understanding the design characteristics that may be

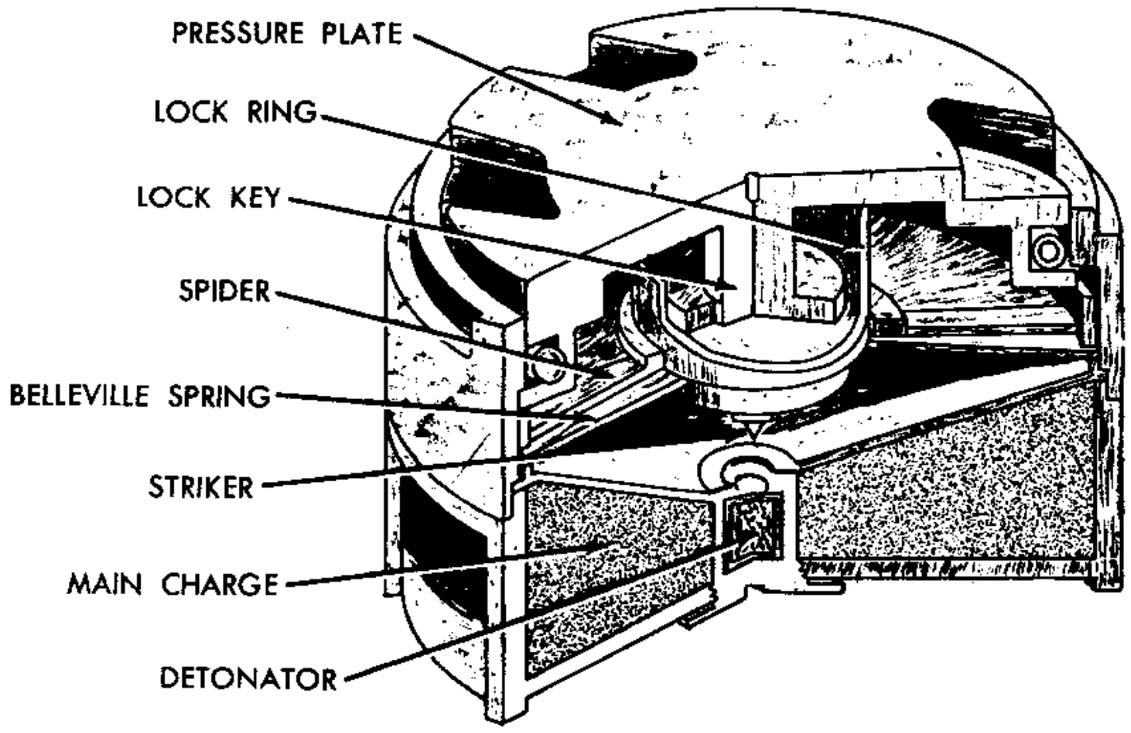


Figure 110. Antipersonnel mine, M14.

present in a manufactured boobytrap. Weighing only 4½ ounces, the M14 contains about 1.1 ounces of tetryl, sufficient in detonation to be effective against personnel within 2 or 3 yards. Its lethal effect is derived primarily from concussion.

b. Like the M14 mine, a manufactured boobytrap should have adequate safety devices to make it safe for normal handling and battlefield use, and sufficient explosive content to make it effective against personnel.

85. Foreign Manufactured Boobytraps

a. While all major powers used limited numbers of manufactured boobytraps during World War II, the remarkable extent to which this type of warfare was carried on by Soviet forces may be appreciated by observing the weird assortment of items dropped behind enemy lines from Soviet planes.

b. Boobytraps that exploded upon being picked up were made by the Soviets to imitate many items issued to German soldiers as part of their standard equipment, as well as other items manufactured for their eye appeal. Many were dropped with misleading German writings printed thereon.

c. Manufactured boobytraps encountered by German soldiers on the Russian front included items of which the following are typical:

(1) Cartridge boxes filled with what appeared to be German rifle ammunition. Instead, propellants had been replaced

with high explosives and detonators. Such ammunition will blow up a weapon and maim or kill the rifleman.

(2) Bandage packets containing shrapnel and a detonator.

(3) Bandage cases, with Red Cross insignia, employed as mines.

(4) Rubber balls, about twice the size of a fist, filled with explosives. These were effective and detonated upon impact.

(5) Silver-grey, light-metal flasks that exploded when the lid was raised.

(6) Cognac bottles filled with incendiary liquid.

(7) Small red flags marked with an "M" and attached to mines which detonated upon removal of flag.

(8) Imitation frogs colored earth-grey which detonated when pressed upon.

(9) Flashlights containing high explosives which detonated when tampered with.

(10) Mechanical pencils, watches, cigarette cases, cigarette lighters, salt cellars, and similar items filled with explosives and arranged to detonate with handling.

d. Typical of the simplicity of construction used in Soviet dirty trick devices is a boobytrap consisting of a hollow book containing two explosive charges, a flashlight battery, a detonator, a wire-loop contact, and connecting wires (fig. 111). When cover of book was raised, touching of the wire loops closed the electric circuit and fired the charge. Never attempt to neutralize a booby-trap of this kind.

e. British forces also used an imitation book boobytrap which detonated upon being withdrawn from a shelf (fig. 112). A trap

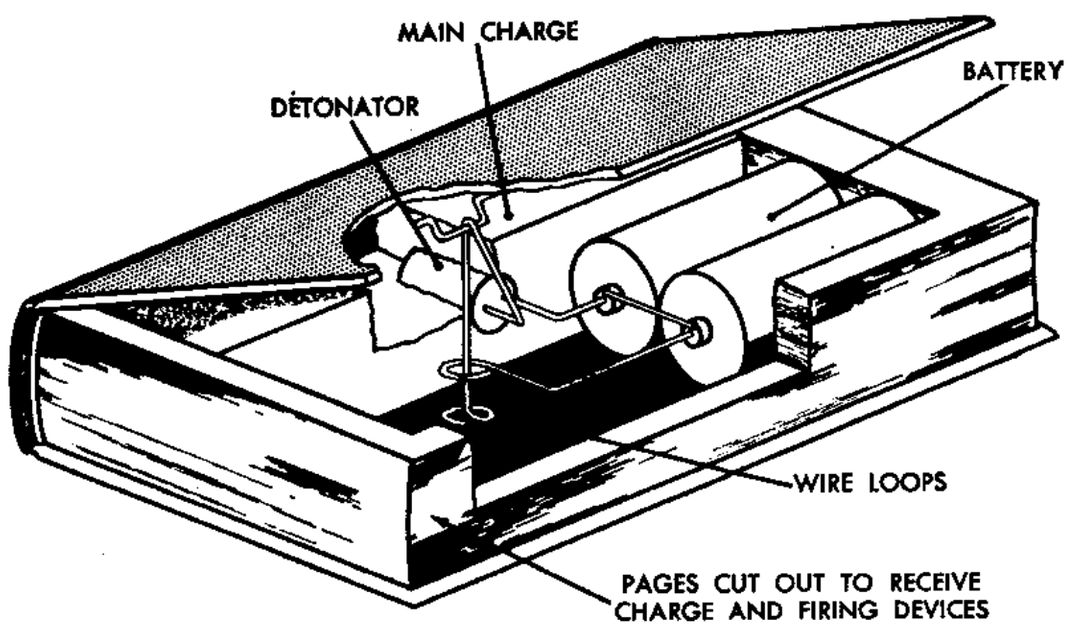


Figure 111. Soviet book boobytrap.

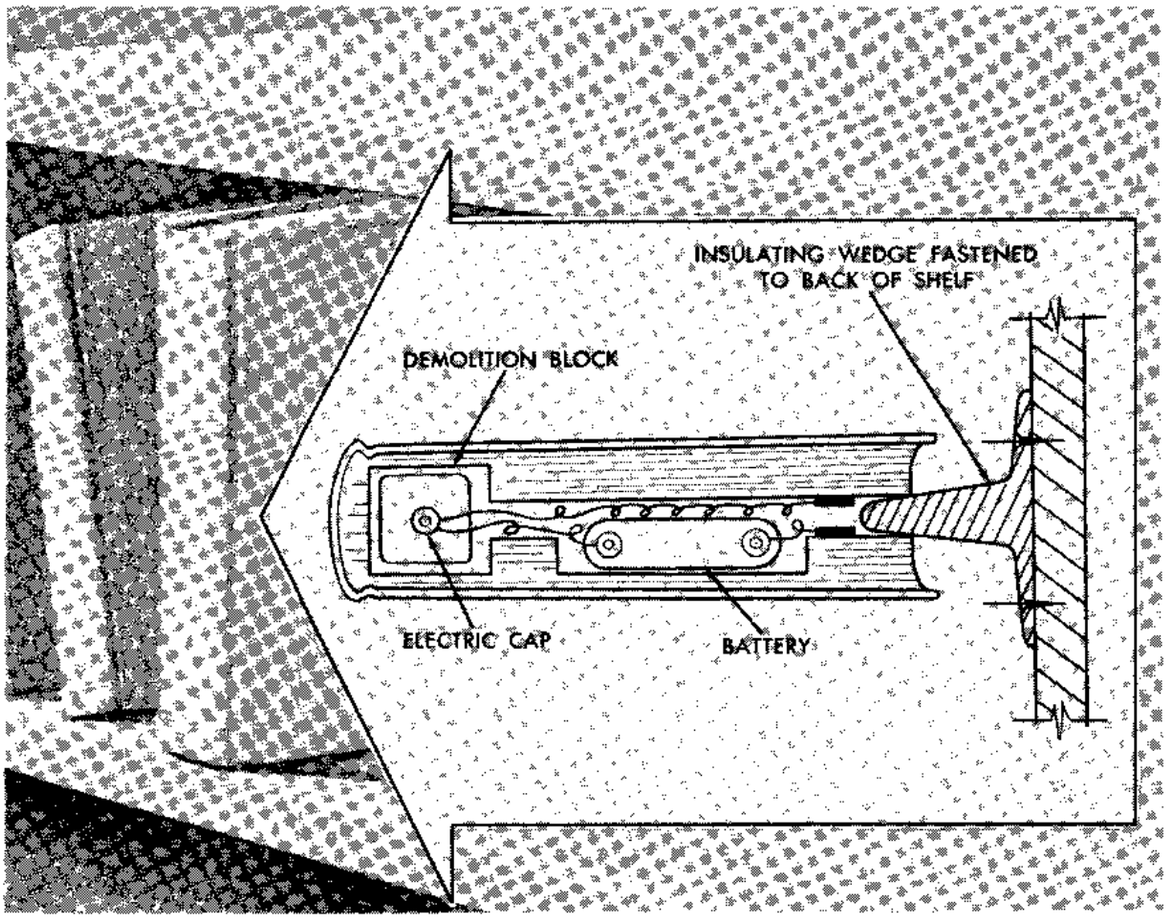


Figure 112. British book boobytrap.

of this kind may be improvised in the field. The book should be fairly large to provide enough room. Only the center portion should be hollowed out, leaving the outside appearance undisturbed. The leaves could be glued together for stability.

f. Illustrated in figure 113 are three types of manufactured boobytraps, each of which employs a different method for providing detonation.

(1) A *flashlight* boobytrap can use the original dry cell battery, switch, and circuit of the flashlight. A standard electric detonator is coupled in the circuit and an explosive surrounds the detonator. To provide lethal pellets, small ball bearings are placed around the explosive. When the switch is moved detonation occurs.

(2) A *bottle* boobytrap contains a liquid explosive which detonates upon extraction of cork. The cork is designed with a friction element that pulls through a sensitive explosive. When suitable corks and liquid explosives are provided, empty bottles which have served useful purposes may be rigged to trap an inquisitive enemy.

(3) A *fountain pen* is small for a boobytrap as the available space for an explosive charge is quite limited. However, it can be made into a boobytrap that uses a spring-

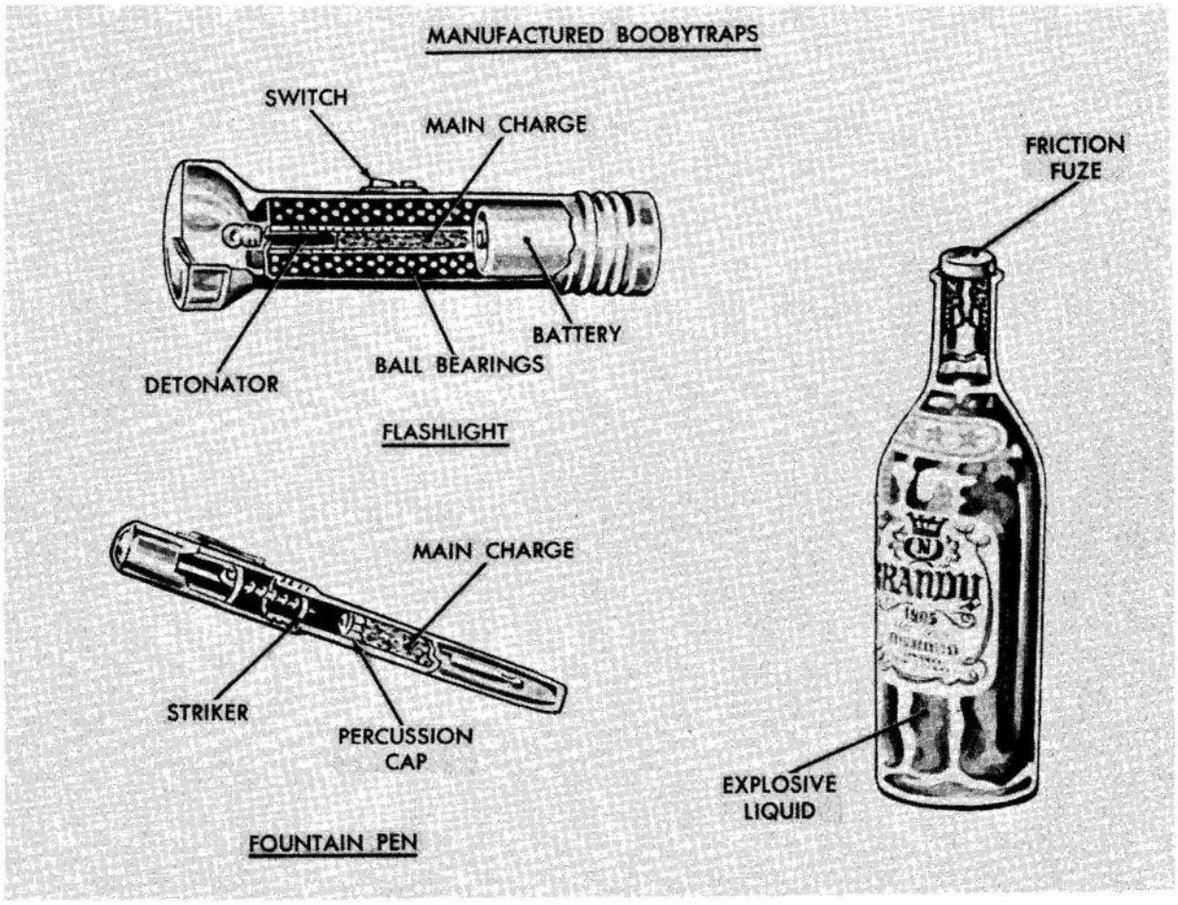


Figure 113. Dirty-trick devices.

actuated striker to fire a percussion cap that detonates an explosive charge. The striker is set in motion when an attempt is made to remove cover.

g. A Japanese manufactured boobytrap is shown in figure 114. Employing a pipe, this device contains a spring-loaded striker that is set in motion to detonate an explosive when someone attempts to unscrew the pipe stem. A safety screw, when in place, prevents unscrewing of the pipe stem.

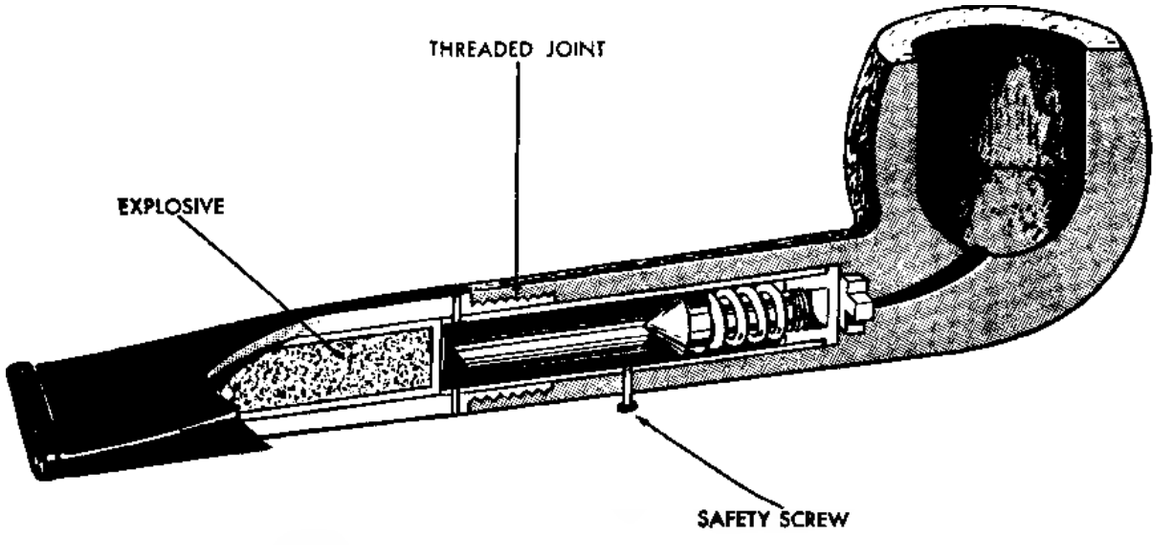


Figure 114. Japanese pipe boobytrap.

h. An Italian manufactured boobytrap is shown in figure 115. An explosive is placed in the earpiece surrounding an electric detonator the latter being connected to the terminals on the back. When these terminals are connected to a live communication line and a switch closed to complete the circuit, current causes detonation. Even a small charge of explosives detonated near an ear will cause serious injury.

i. Among German manufactured boobytrap was the canteen (fig. 116). It consisted of a standard German or United States canteen, containing an explosive charge. A pull fuze was connected to the canteen cap by a wire. Partially filled with water and placed in its canvas case the canteen was a deceptive boobytrap. Its effective radius was from 3 to 4 yards.

j. A whistle boobytrap (fig. 117) also used by the Germans during World War II, consisted of a whistle containing a charge coated with a compound easily ignited by heat from friction. A ball in the whistle was coated with rough material. When the whistle was blown the ball vibrated and friction developed between the ball and the explosive compound fired the charge.

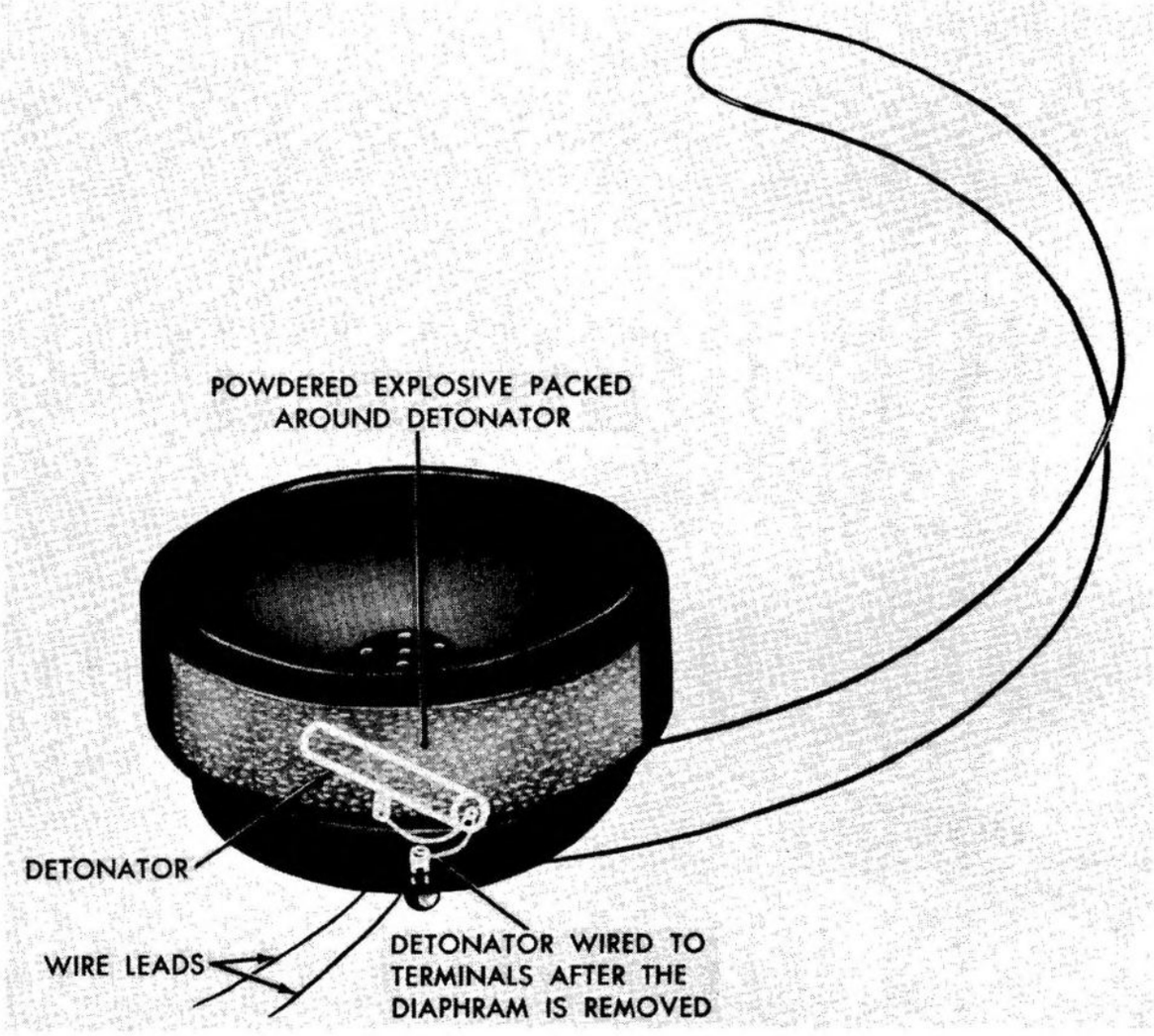

POWDERED EXPLOSIVE PACKED AROUND DETONATOR
DETONATOR
WIRE LEADS
DETONATOR WIRED TO TERMINALS AFTER THE DIAPHRAM IS REMOVED

Figure 115. Italian headset boobytrap.

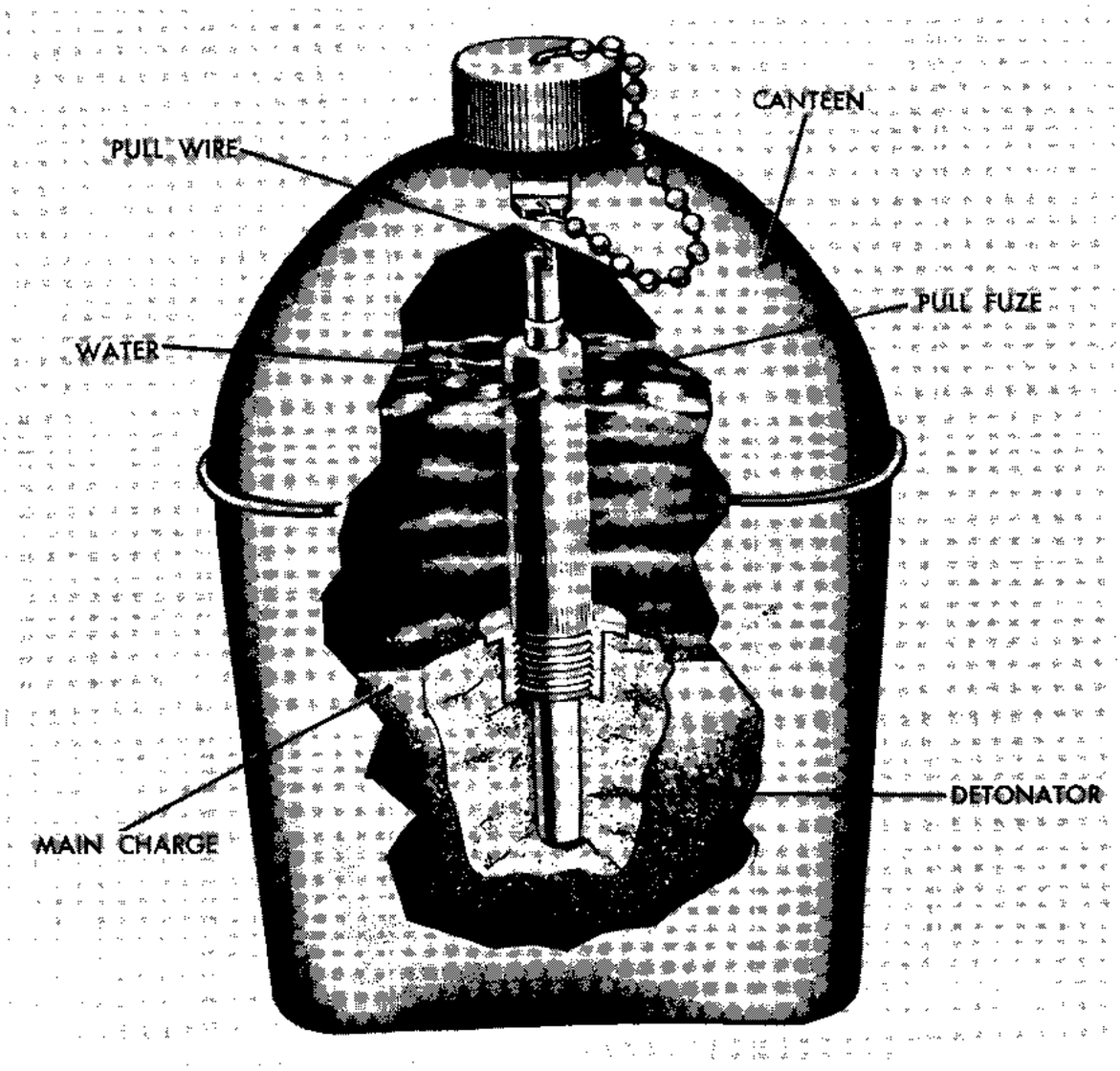


Figure 116. Canteen boobytrap.

k. Another illustration of German ingenuity is found in their candy-bar boobytrap (fig. 118), which consisted of an imitation candy bar coated with real chocolate. When a piece was broken from either end of the bar, pull was exerted on a thin canvas strip connected to a fuze. After a delay of 7 seconds, the charge exploded.

l. A phony telephone can be manufactured that will detonate when an attempt is made to use the instrument. Weight of the receiver holds the release hook in place. When this weight is lifted a spring-actuated striker fires a percussion cap, which detonates the high-explosive charge hidden in the base of the telephone (fig. 95).

m. An imitation parasol may be built that will detonate when an attempt is made to open it (fig. 119). Breaking of a vial containing sulphuric acid initiates detonation within a detonator and a main charge of high explosive.

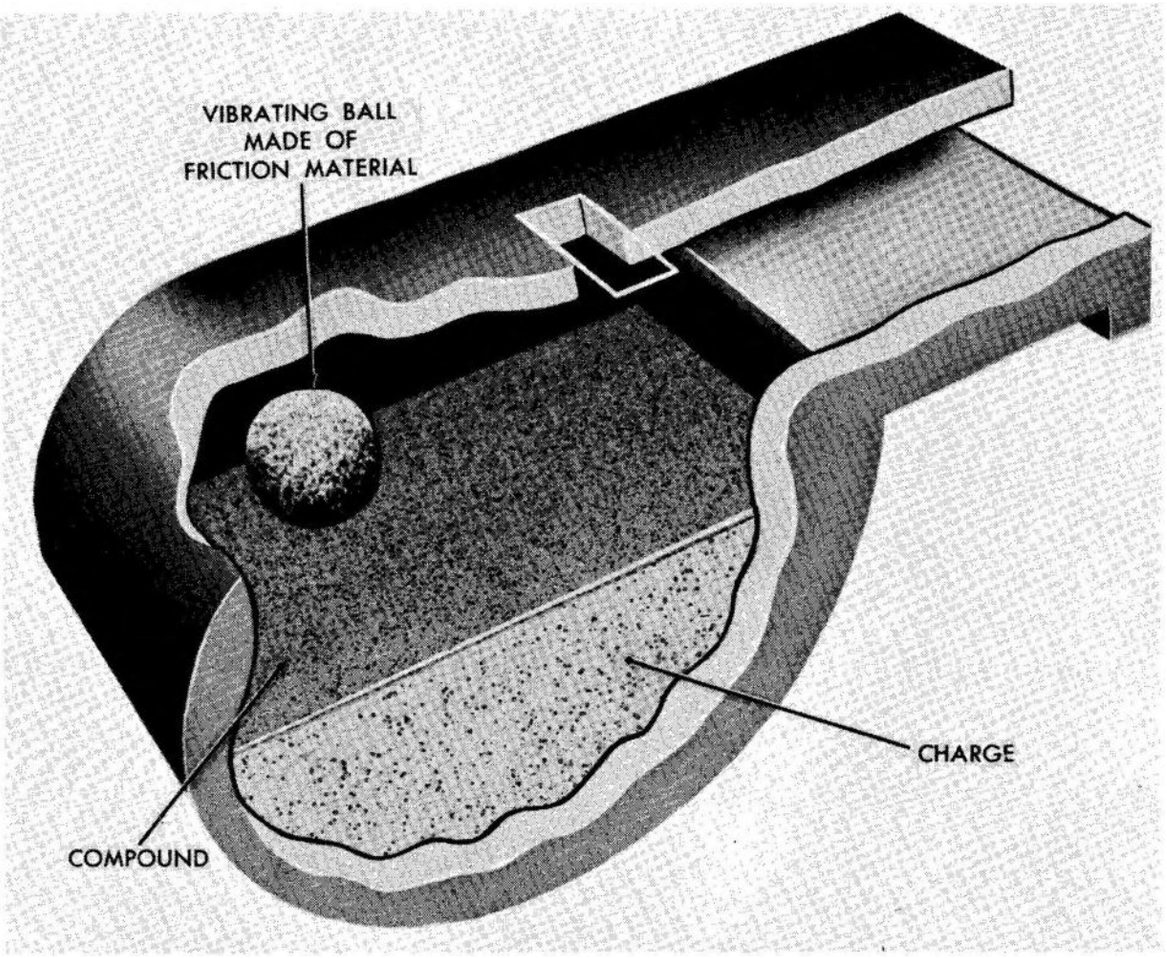


Figure 117. Whistle boobytrap.

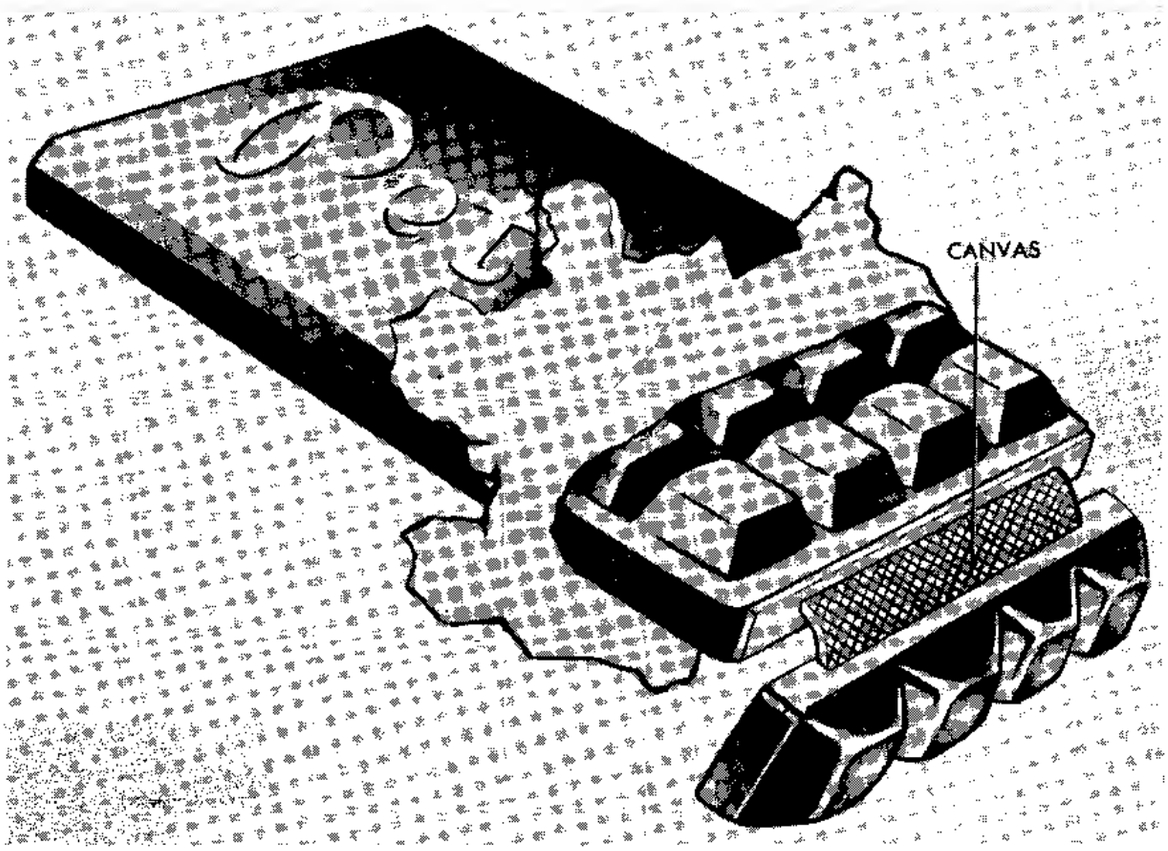


Figure 118. Candy-bar boobytrap.

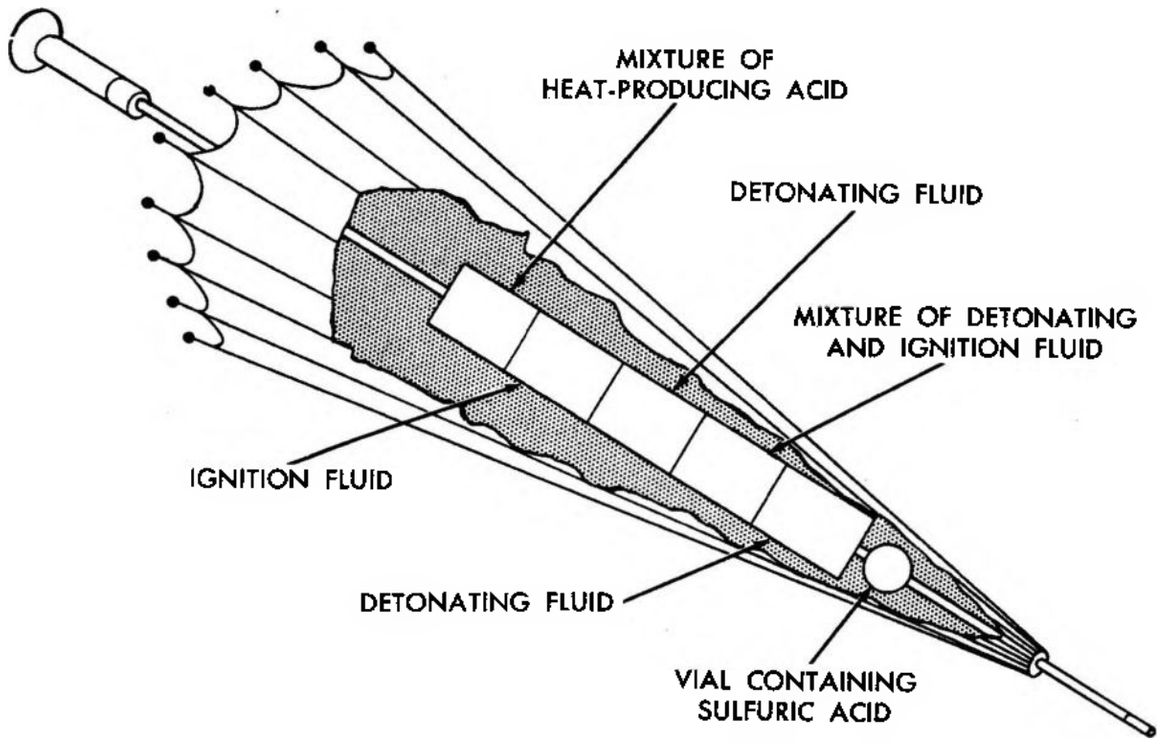


Figure 119. Parasol boobytrap.

Section II. IMPROVISED DEVICES

86. Tactical Importance

a. Human needs of enemy soldiers may run high. Many soldiers of so called "have not" nations never owned or have never worn a good pair of shoes. Their food, as well as clothing, lacks many items considered basic necessities by American soldiers. Charitable thoughts, however, cannot be extended to an enemy.

Figure 120. Ration can boobytrap.

b. Since many American castoffs are sought by enemy soldiers, intermingle boobytraps with every lot of items left behind in an enemy's path. Food containers, old clothing, broken watches, cigarette cartons, and similar items may be quickly converted into a surprise for an enemy (figs. 120-123).

87. Type

a. Small charges are adequate to inflict all damage needed for traps of this kind. Nothing larger than a hand grenade or a few demolition blocks is necessary. Many small boobytraps used in

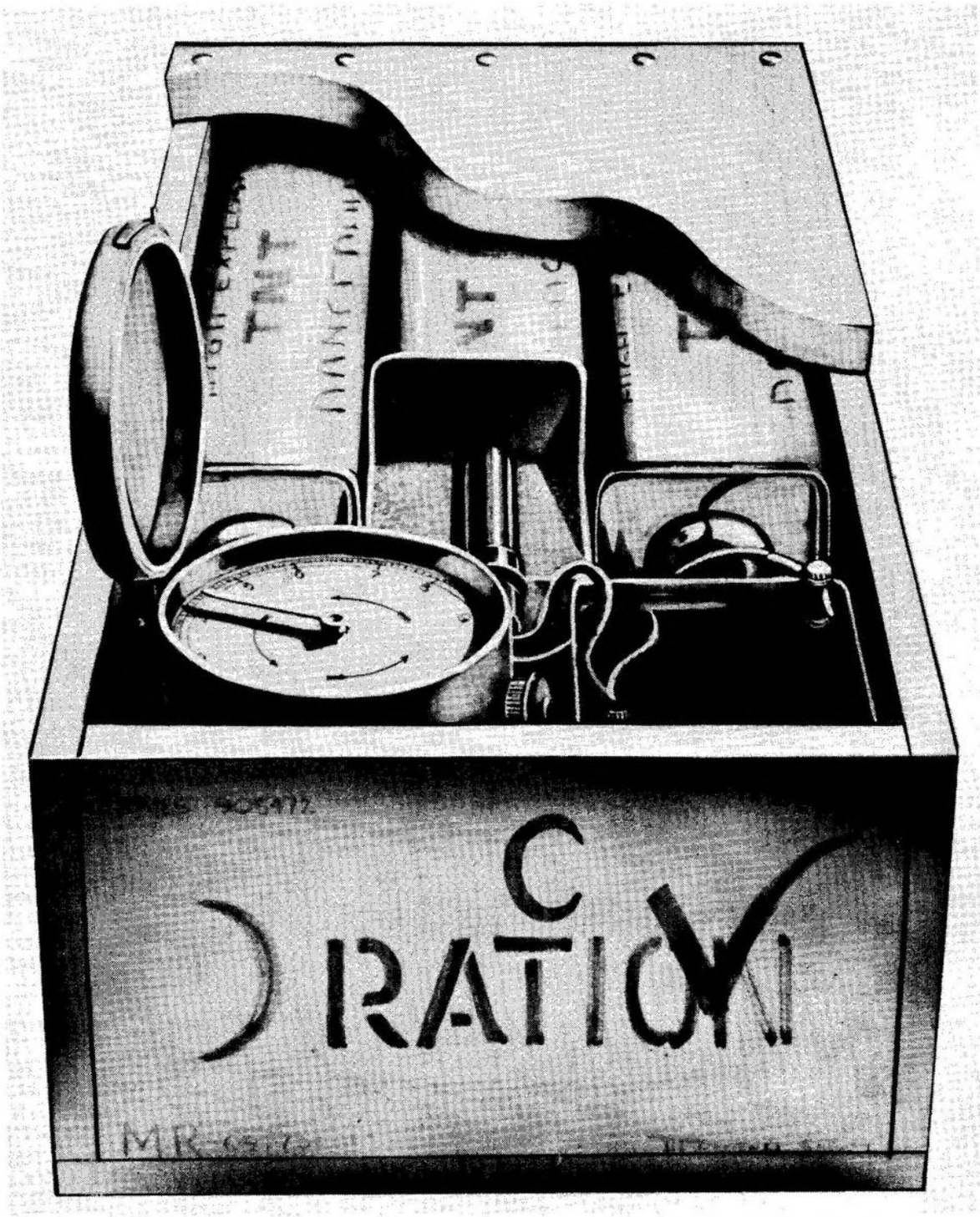


Figure 121. Ration box boobytrap.

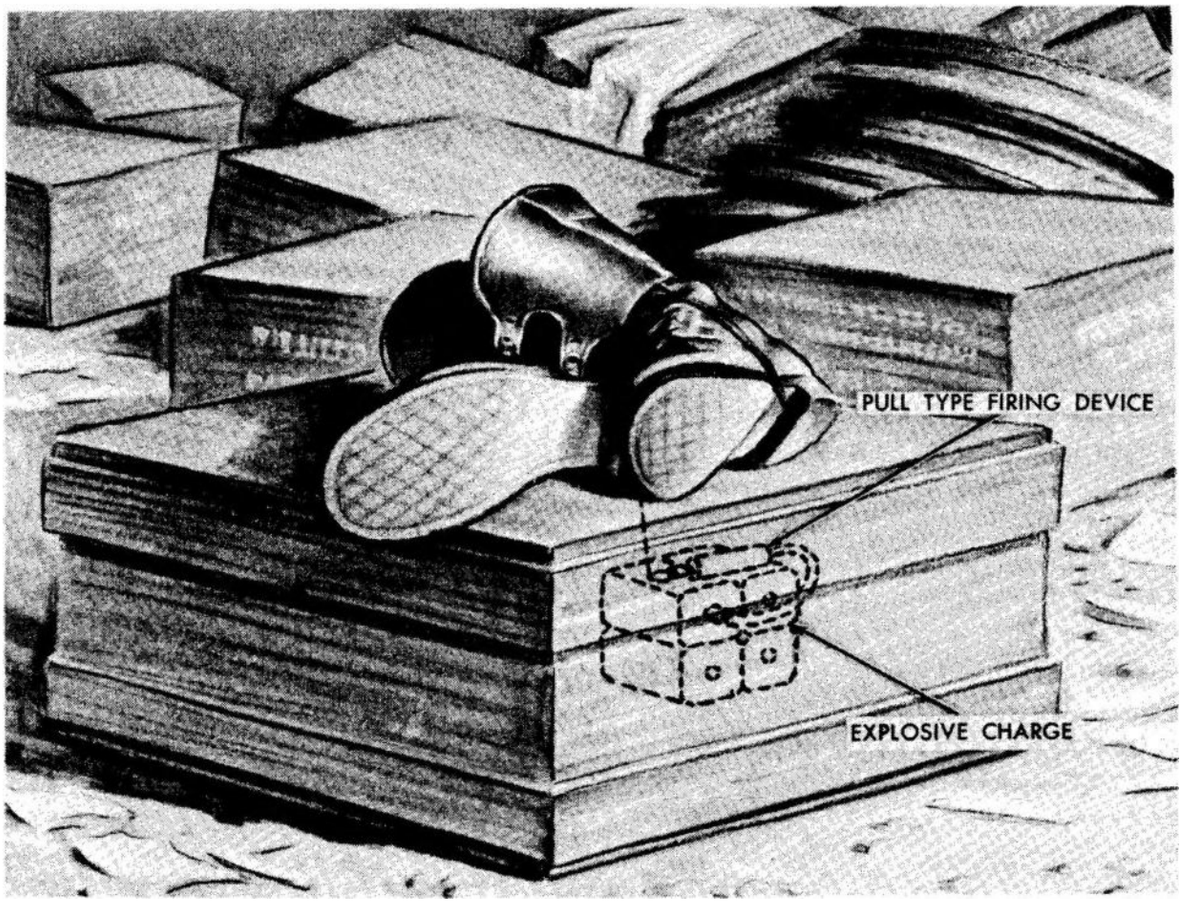


Figure 122. Shoe boobytrap.

a wide variety of containers are much better strategy than a few large charges.

b. These are the sort of devices that boobytrap specialists may use to practice their design technique upon. Numerous accumulated articles may be partially assembled so that a quick con-

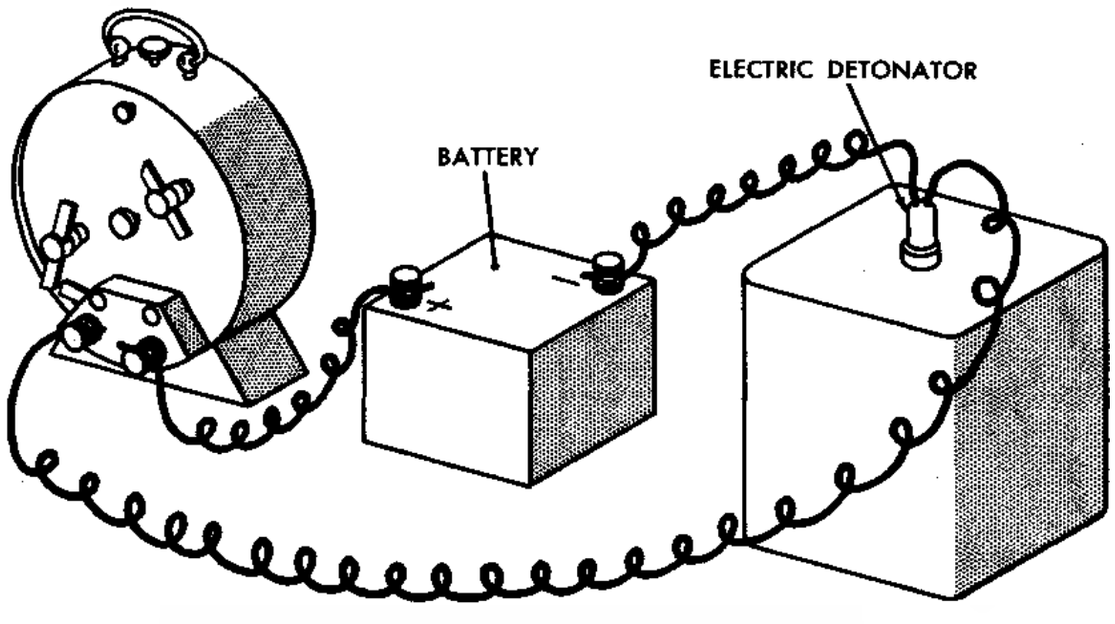


Figure 123. Alarm clock may be used to fire a charge at a definite time.

nection of a firing device is all that is necessary for emplacement when a favorable opportunity arises.

c. Because of the nature of these types of boobytraps, they cannot be used indiscriminately. They are excellent as souvenirs to leave behind when an area is to be given over to an enemy for a considerable period of time. Never place them where friendly forces may pass before an enemy has had time to trip them. Never scatter miscellaneous boobytrap items in minefields, except where such areas are abandoned as nuisance minefields, as there is always danger of friendly troops picking them up.

CHAPTER 12

FOREIGN BOOBYTRAPS

Section I. BRITISH MATERIEL

88. Equipment

a. During World War II the British used in their boobytraps a wide variety of switches including pressure, pull, pressure-release and electrical. The term fuze or igniter was used by British troops when referring to devices used to actuate land mines, and the term switch when referring to devices used to actuate boobytraps and time (safety) fuses.

b. British equipment closely resembles that available to U. S. forces for use in boobytrapping. Mining and demolition equipment together with standard fuzes, switches, caps, wire, etc. are employed. Spring operated switches are the most common. Generally they consist of a triggering device, a striker, and base for attaching a nonelectric cap.

89. British Boobytraps

a. Many boobytrap ideas illustrated in this manual are of British origin. Those shown in figure 17, 77, and 89 are generally considered British ideas and many others have a close resemblance. They call the water barrel trap an "electrolytic water butt."

b. Among interesting British specimens of trick devices is a ball-bearing contact doorknob boobytrap (fig. 124). Attached securely to an inside doorknob, a ball bearing rolls when the knob is turned. When ball touches nails protruding from cork, an electric circuit is completed. A case may be made of metal, glass, plastic, or any number of materials. This is another type of circuit closer comparable with those shown in figure 17.

Section II. GERMAN MATERIEL

90. Equipment

a. Boobytraps were used extensively by the Germans. They used items made especially for the purpose, as well as many im-

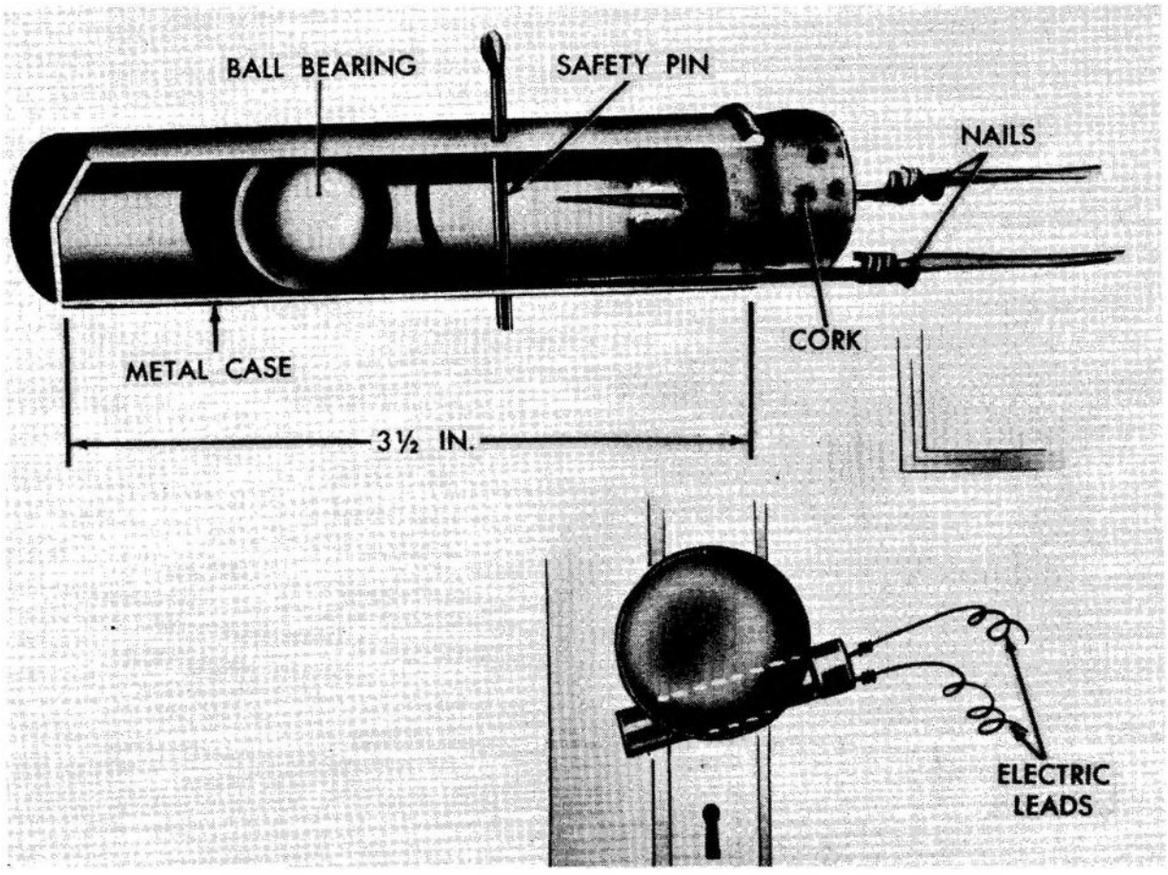


Figure 124. British ball-bearing contact, doorknob boobytrap.

provised devices. Having a wide assortment of fuzes and demolition equipment, their boobytrap designs were quite varied.

b. The Germans developed special devices for use in boobytraps. These devices operated either by pressure-release, pull, or a combination of both methods.

c. A wooden pressure-release device for use in boobytraps was also developed by the Germans (fig. 125). Two safety pins were used and, when removed, the device fired when the striker-release lever was released. Hand neutralizing of any boobytrap with an antilifting device is dangerous, tedious, and time consuming and should be done only when absolutely necessary. When a pressure-release device of this type cannot be neutralized without disturbing its position or when the lower safety-pin hole is not accessible, it should be destroyed in place.

91. German Boobytraps

a. It was common practice for the Germans to boobytrap bivouac areas and houses which would make the best barracks. Boobytraps were also left in pianos, closets, iceboxes, behind pictures, under dishes and flower bowls, and under beds. Boobytraps were attached to windows, door-knobs, cabinets, shower faucets, telephones, and any other fixture or object that might seem harmless. Another favorite place for boobytraps was in latrines.

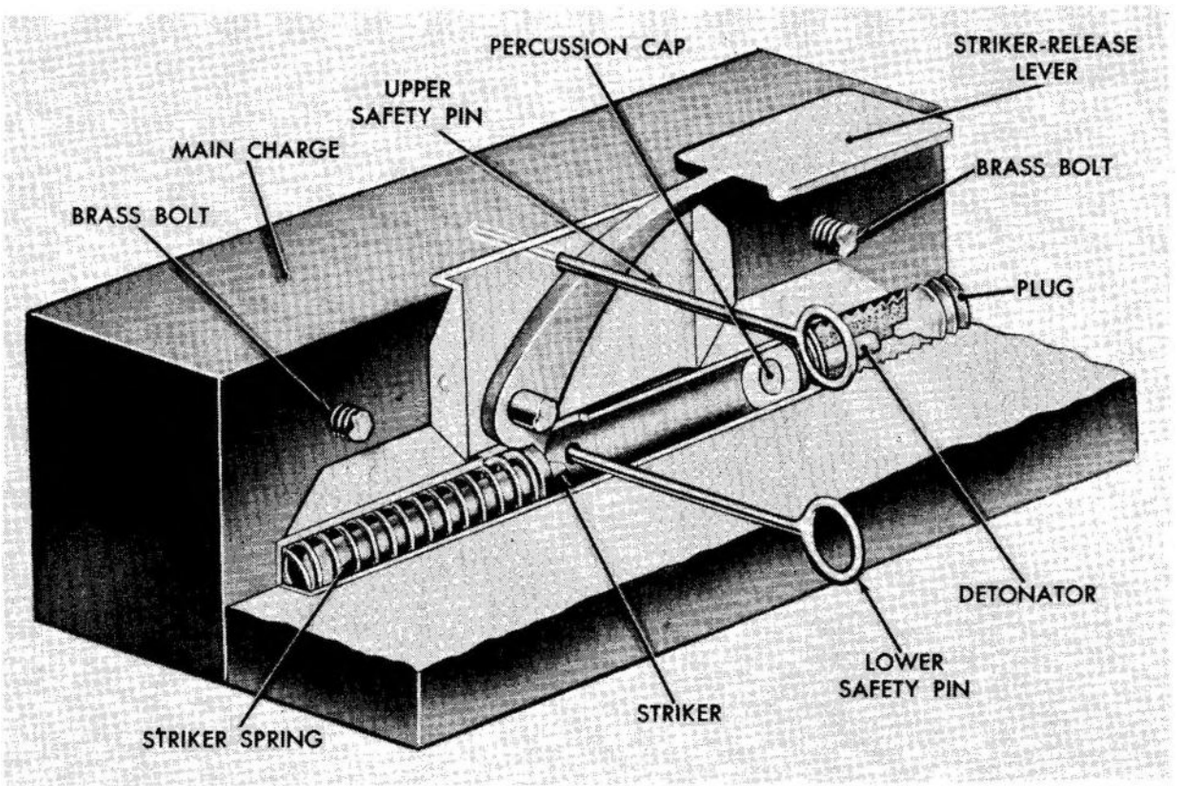


Figure 125. Nipolite pressure-release device.

b. An illustration of the type of boobytrap used on paths and along highways by the Germans is shown in figure 126.

c. Another antipersonnel device invented by the Germans and called the pistol ground spike (fig. 127) was nicknamed the

Figure 126. Potato masher boobytrap.

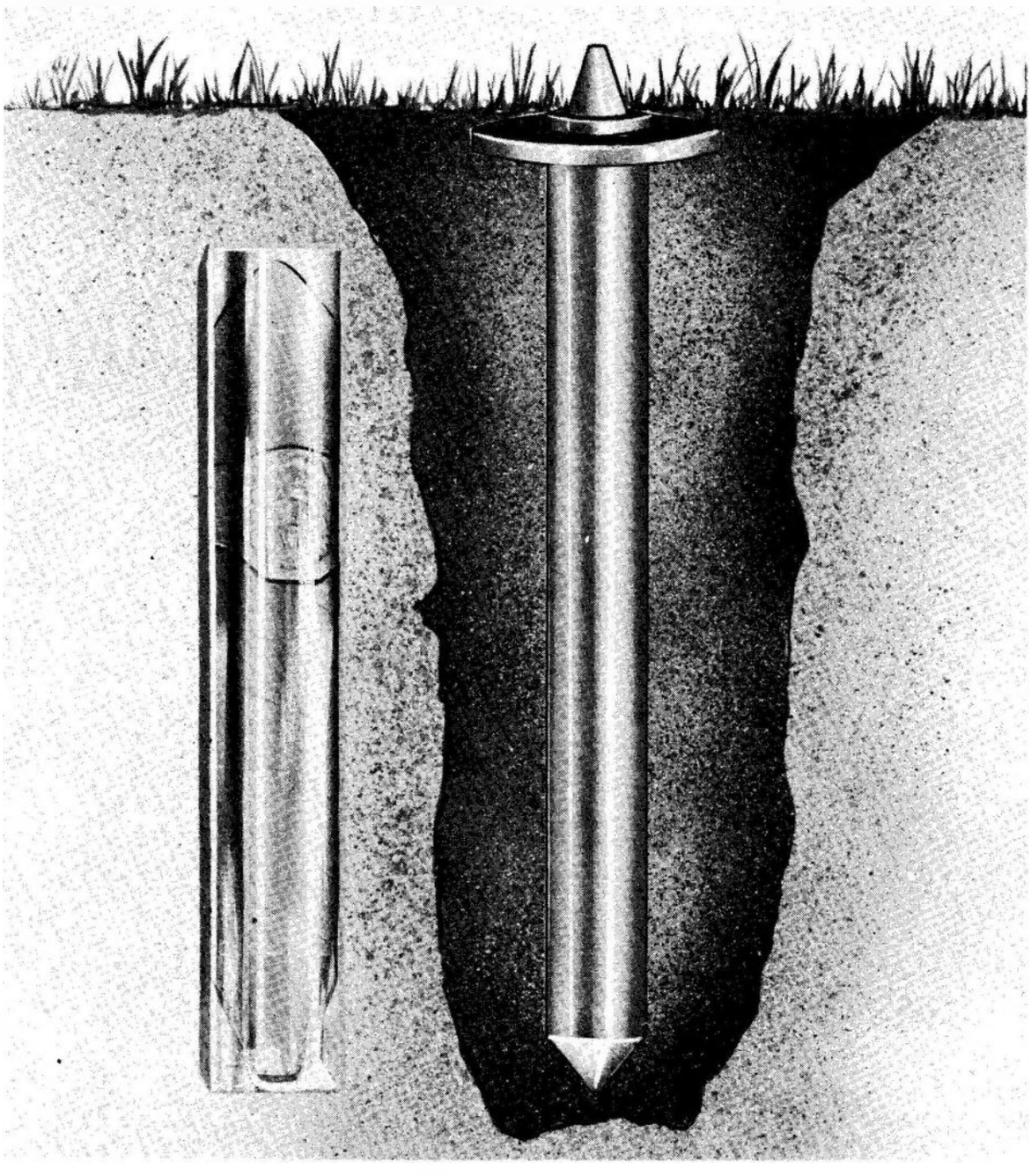


Figure 127. Pistol ground spike.

"castrator" by American soldiers. Device was easy to plant and hard to detect, as little ground was disturbed. Operating as a miniature mortar, the six inch hollow spike of a castrator was driven into the ground flush with the surface. The projectile consisted of a small arms cartridge which was dropped in the hollow spike, nose up. Stepping on the bullet exerted enough pressure (4 pounds minimum) to release a spring that drove a striker against the cartridge cap firing the round. Traveling upward, the bullet can penetrate foot, leg, or thigh.

d. Besides using many different manufactured boobytraps, the Germans, knowing the American soldier's weakness for souvenirs, boobytrapped all sorts of objects such as cameras, helmets,

rifles, thermos bottles, and similar items abandoned in their retreat (fig. 128).

e. A typical example of how German soldiers boobytrapped abandoned property in a retrograde movement is shown in figure 129. A container that can serve useful purposes is attached to a concealed mine, fuzed to detonate when can is disturbed.

f. Another example of a useful abandoned German object that has been boobytrapped is shown in figure 130. A taut tripwire tied around the rim of the wheelbarrow's wheel is connected to a pull fuze. Turning of the wheel by only a small amount will result in detonation of a large explosive charge hidden beneath the wheelbarrow.

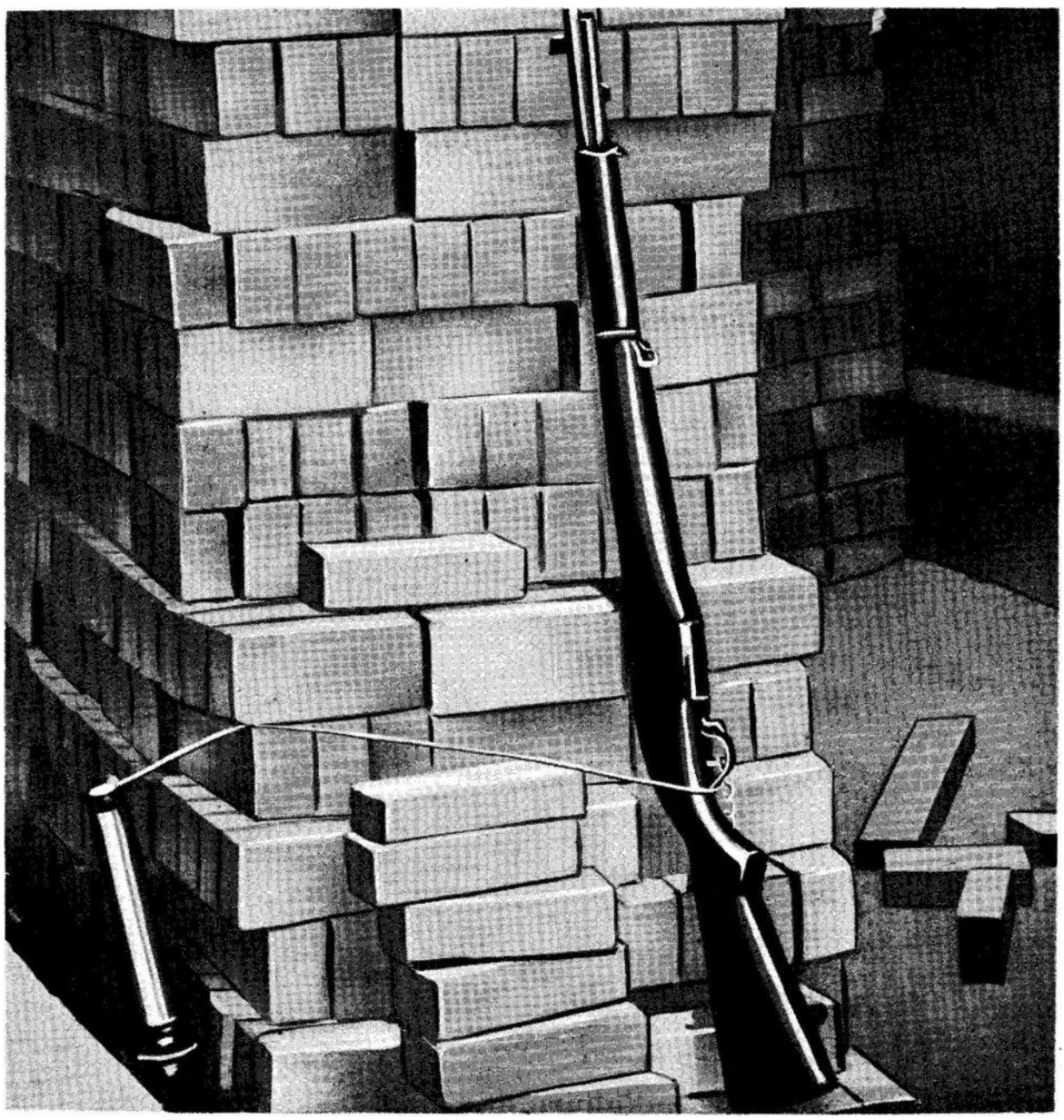


Figure 128. German rifle and stick grenade.

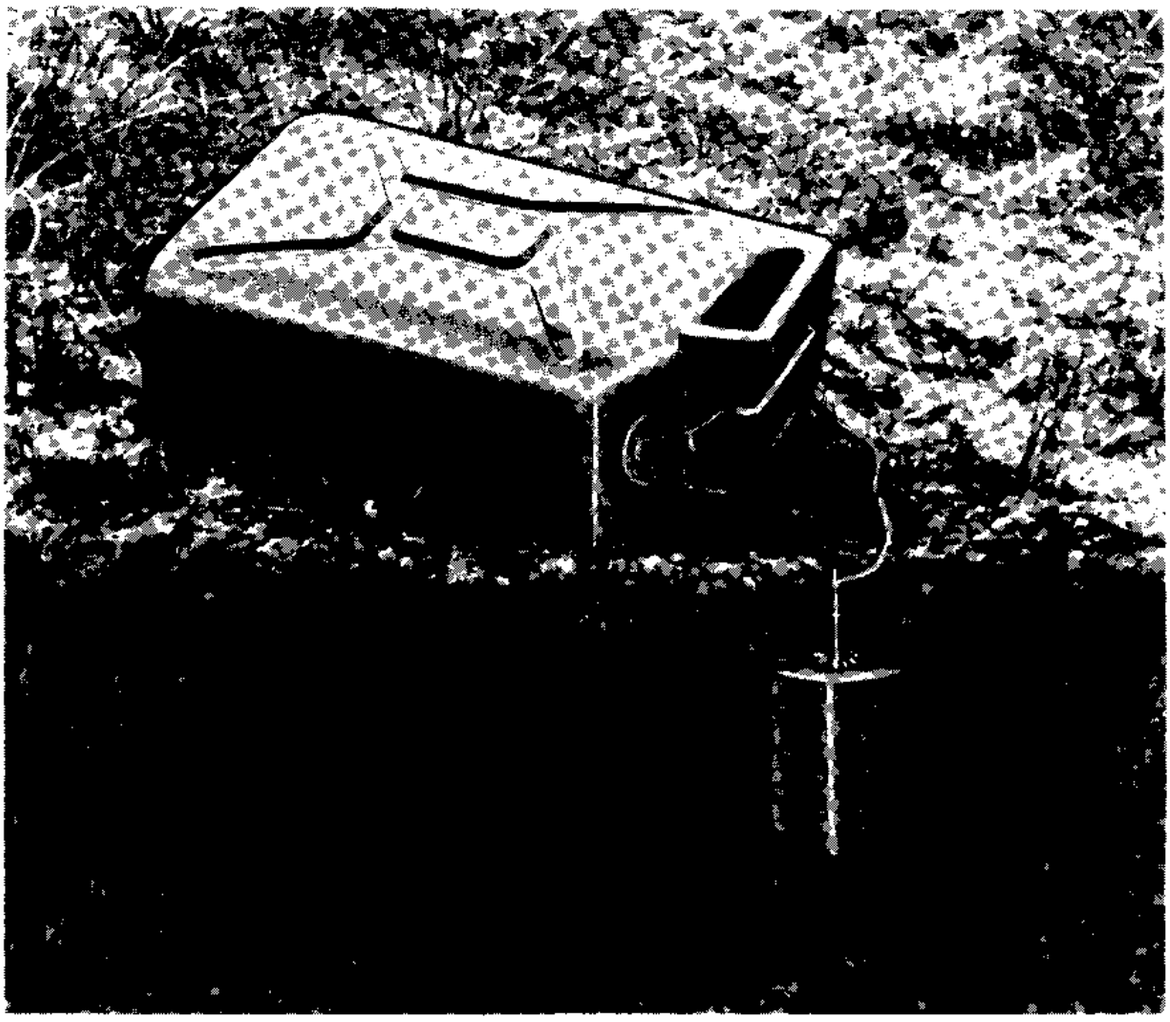


Figure 129. Jerrican boobytrapped to "S" mine.

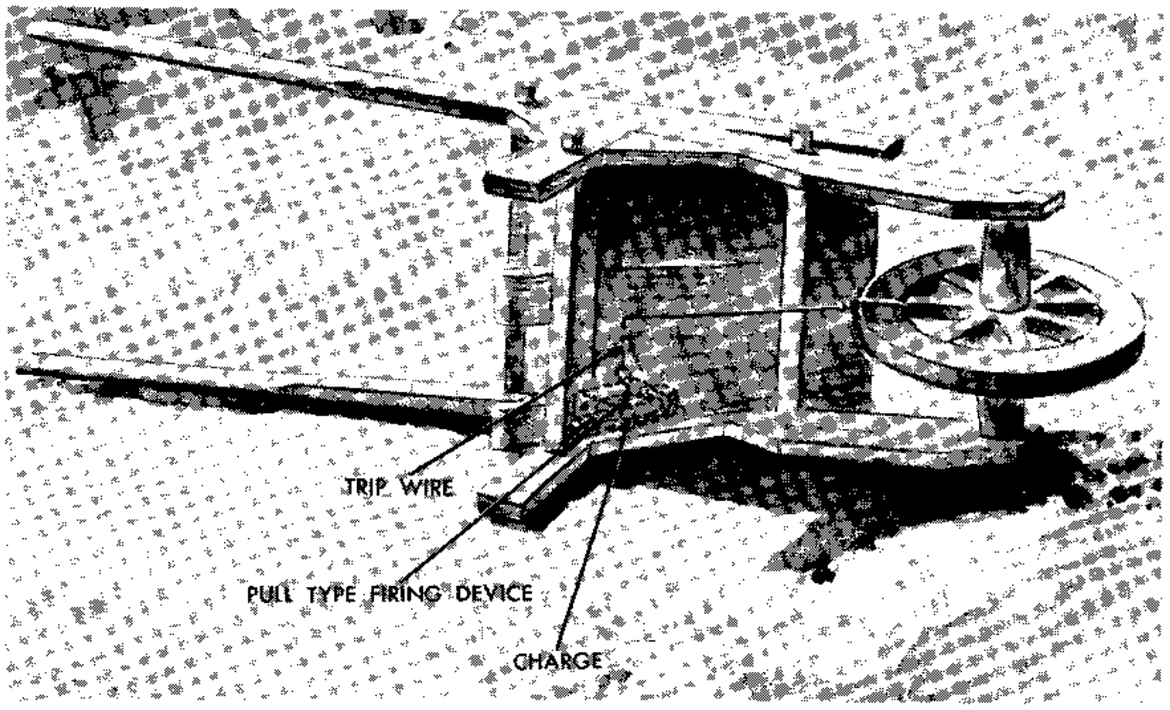


Figure 130. Boobytrapped wheelbarrow.

Section III. SOVIET MATERIEL

92. General

During World War II, the Soviet Army taught and extensively practiced field improvisation of boobytraps and the employment therewith of captured enemy material. German combat reports stated that the average Soviet combat soldier was particularly ingenious in devising and placing boobytraps.

93. Soviet Boobytraps

a. Wooden Pressure-Release Device. Simplicity of design is illustrated in their wooden pressure-release device (fig. 131). Placed under any object, the boobytrap detonates when load is lifted. When the object is removed, the two compressed springs push the lid up and the hook pulls the striker-retaining pin out of the fuze, firing the device.

b. Rail Spike Boobytrap. This boobytrap (fig. 132) is laid under a railroad tie to harass crews repairing railroad track or altering their gage. Lifting of the long spike will release fuze to detonate main charge. Location of such a device was revealed by an indicator spike on end of railroad tie. The trap can be neutral-

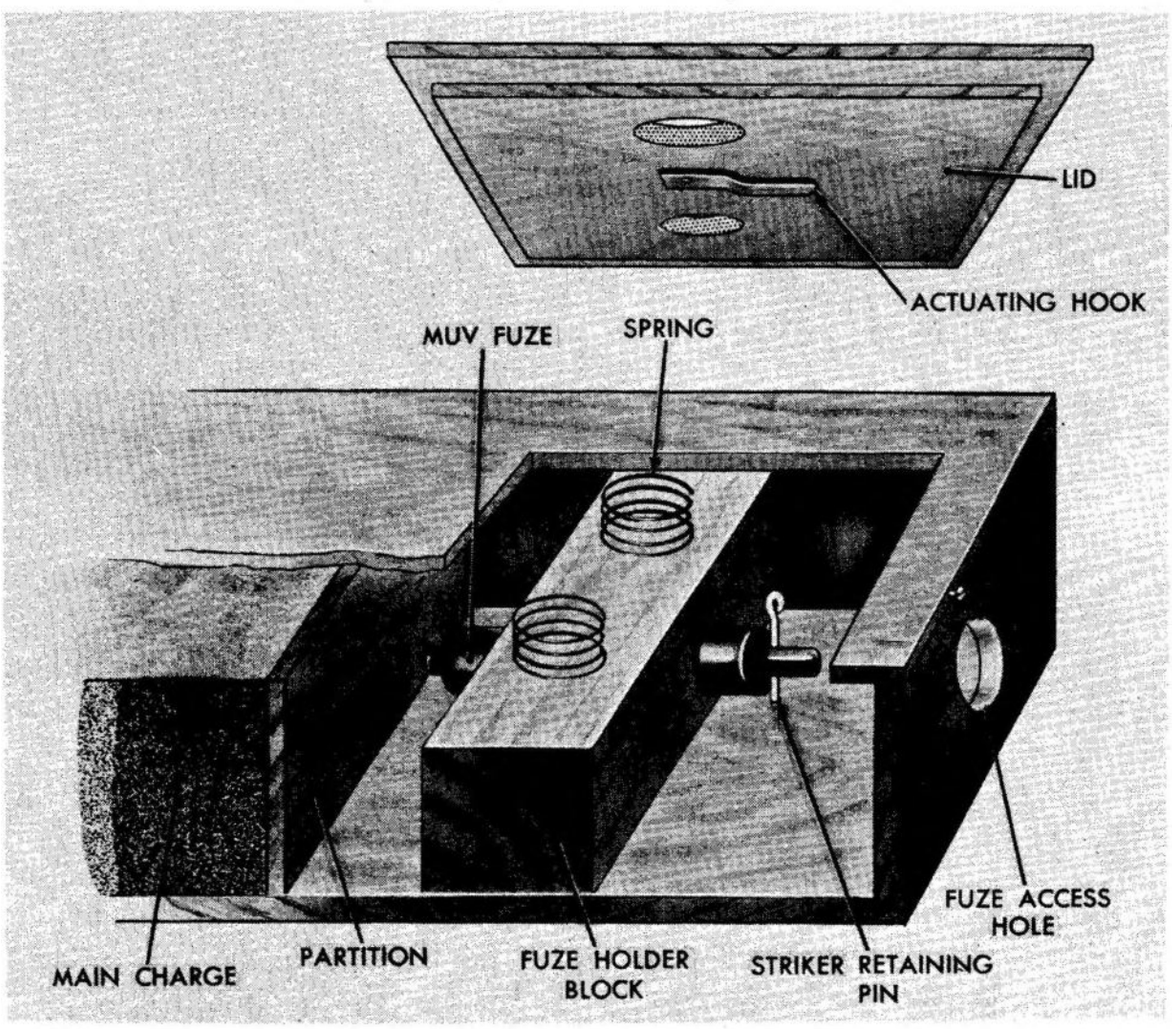


Figure 131. Soviet wooden pressure-release device.

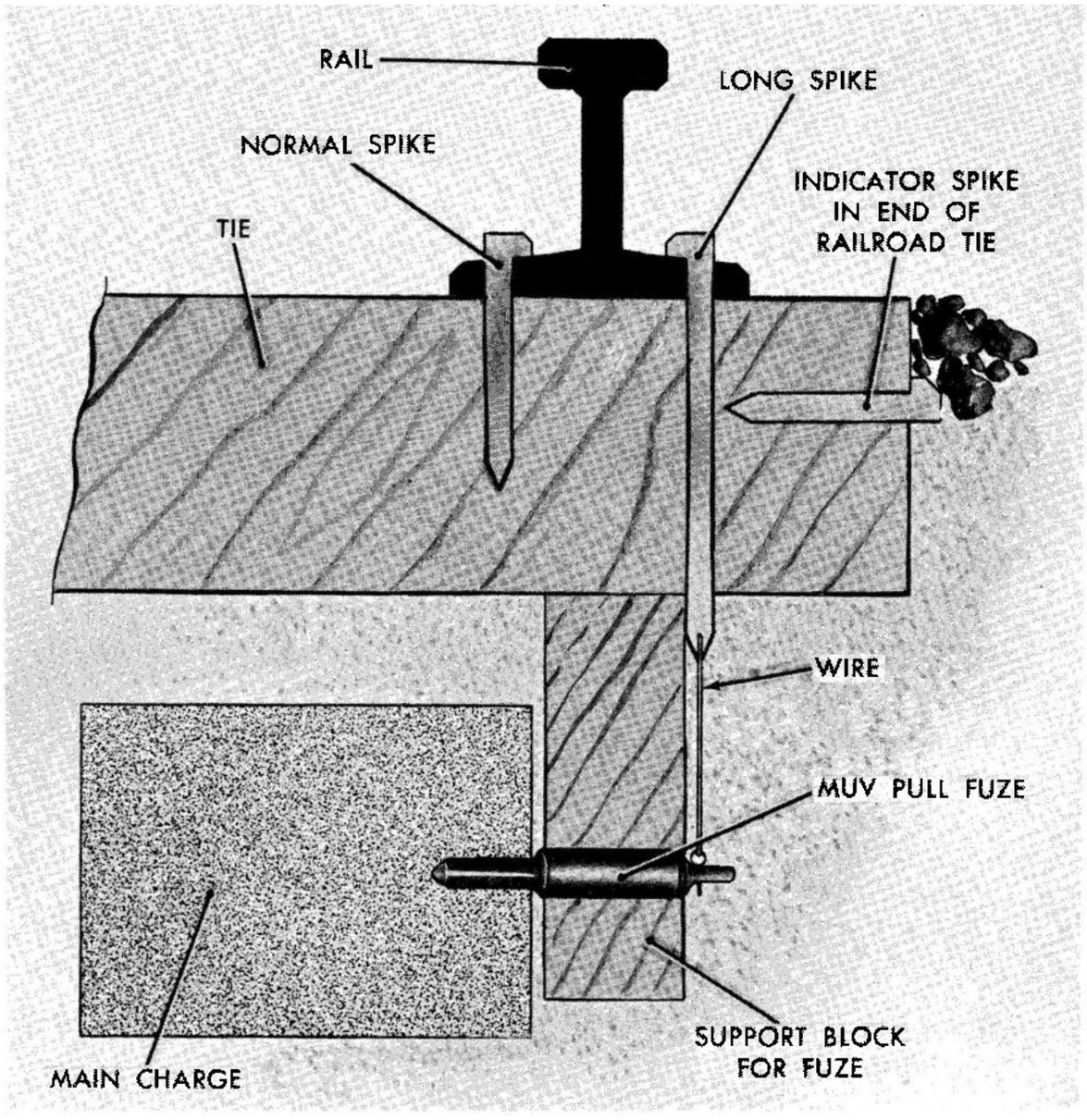


Figure 132. Rail spike boobytrap.

ized by uncovering roadbed around charge until fuze and pull wire are exposed. After cutting the pull wire, the fuze and attached detonator can be removed.

c. Improvised Shell Boobytrap. Soviet practices include the use of shells, bombs, and other items as main charges. Illustrated in figure 133 is a buried shell rigged as a boobytrap. Concealed below ground a pull fuze is fired when a careless hand moves the stake to which the trip-wire is joined.

d. Power System Boobytraps. In towns or cities which had been under artillery fire or bombing, many wires were left loose and disconnected. It was common practice for Soviet troops to place large charges of explosives in nearby buildings (fig. 134). These charges were connected to existing electrical circuits. When wires were repaired and power turned on, the charges in buildings detonated.

e. Boobytrapped Boat. Soviet troops frequently boobytrapped boats anchored along a stream (fig. 135). A concealed pull wire connected bottom of boat to charge anchored below at edge of stream.

f. Boobytrapped Wood Pile. A pressure-release fuze was frequently attached to a main charge and wedged within a pile of wood to catch anyone who disturbed the pile. More than one boobytrap of this kind was frequently located in the same wood pile.

Section IV. CHINESE COMMUNIST AND NORTH KOREAN MATERIEL

94. Equipment

a. Improvised enemy mines and boobytraps were encountered by U.N. forces in Korea more and more frequently as the war

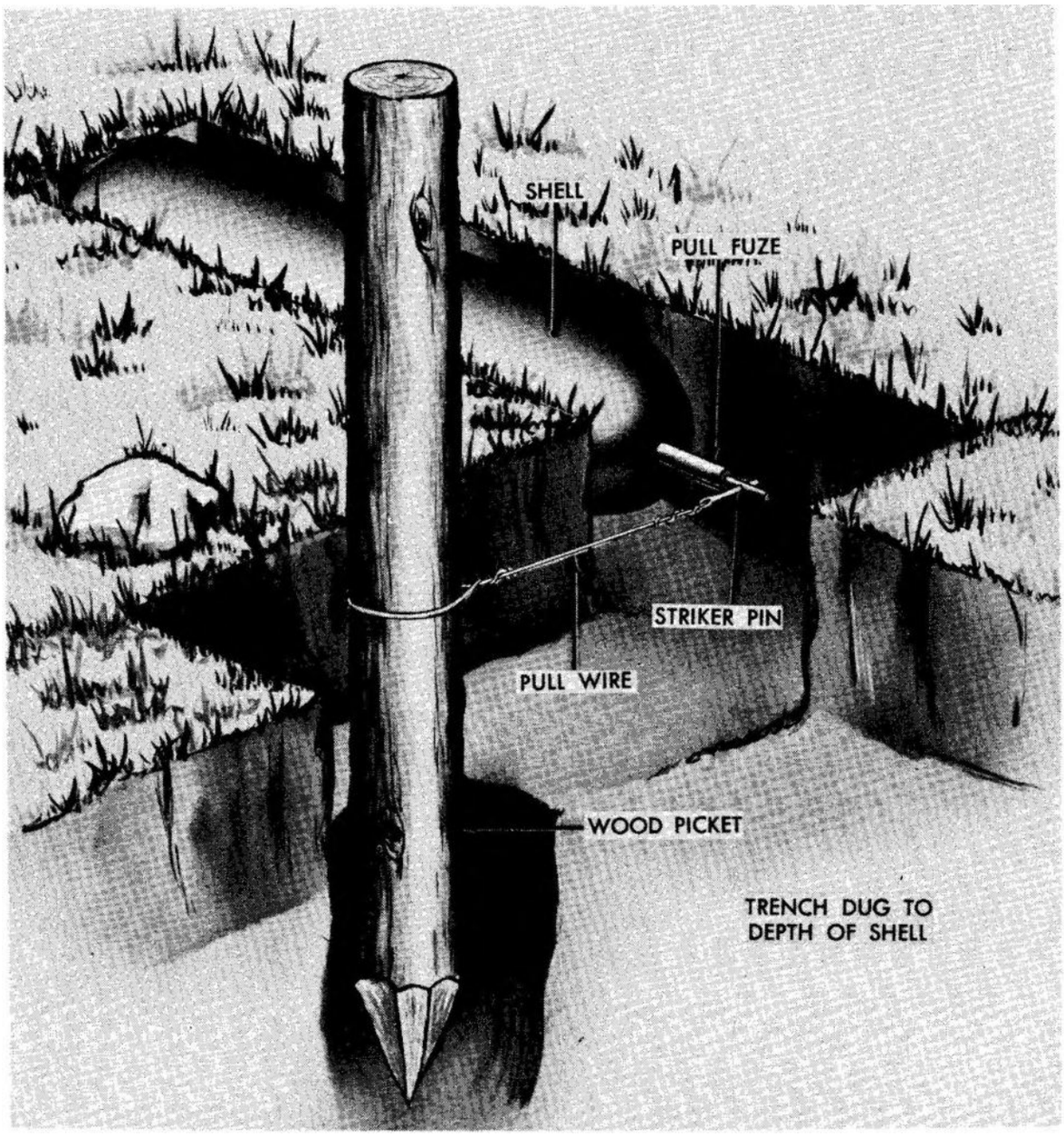


Figure 133. Improvised shell boobytrap.

Figure 134. Power system boobytrap.

Figure 135. Boobytrapped boat.

progressed. Although the first boobytraps employed by CCA and NKA were fairly ineffective devices, the quality of enemy improvisations also improved as time passed.

b. Both armies used many kinds of external actions for detonating boobytraps. In general, these actions may be classed as pressure, automatic, and trip-wire. Both slack wires and taut tension-release wires were used on boobytraps.

c. Improvised base charges for boobytraps were in the form of standard bangalore torpedoes, artillery and mortar shells, aerial bombs, hand grenades, and explosive filled containers such as tin cans, empty wooden boxes, fuel drums, barrels, glass bottles, clay pots, and the like.

d. One type of improvised charge frequently used with boobytraps is shown in figure 136. The main charge is a cloth bag filled with explosives and the detonating assembly consists of a concussion grenade.

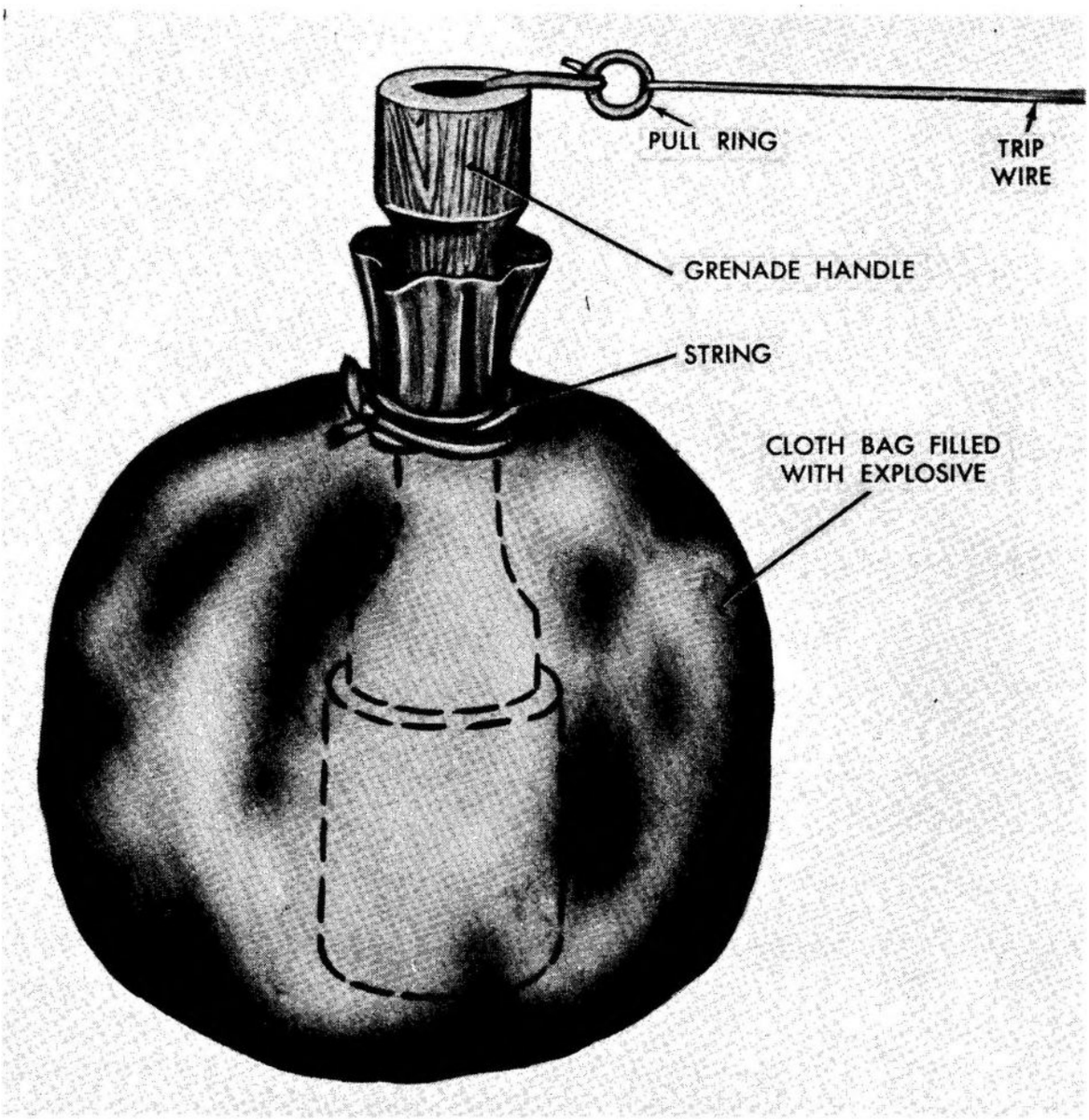


Figure 136. Improvised charge.

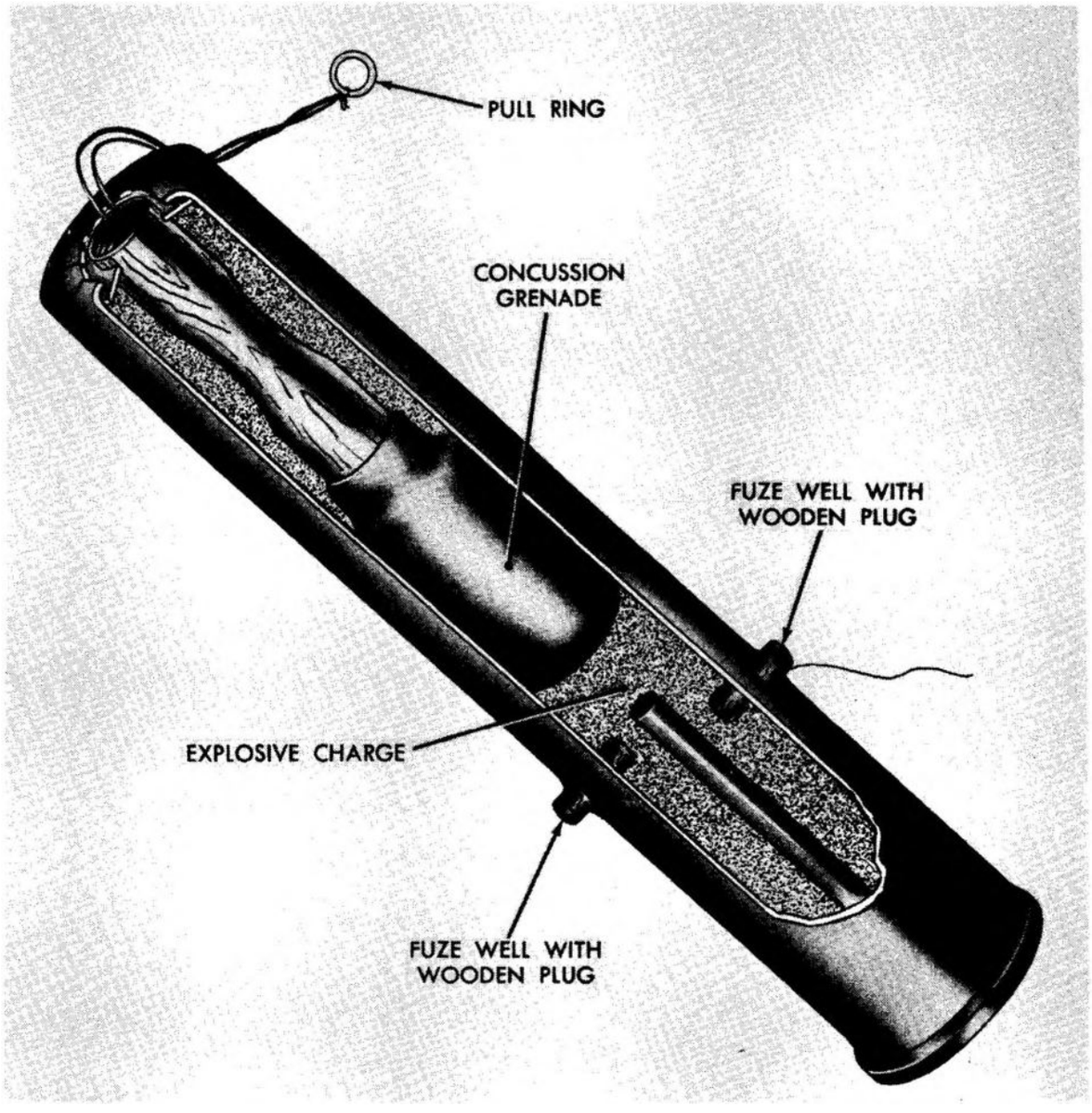


Figure 137. Shell case charge.

e. Another form of improvised explosive charge used with boobytraps is shown in figure 137. This consists of an empty shell case filled with explosives, and employing a concussion grenade as the detonating assembly. After the case was partially filled with high explosives, the grenade was inserted, explosive head first, into the open end of the shell case. With the opening crimped to hold the charge intact, the pull ring of the grenade was available for trip-wire connection. Two additional fuze wells in the shell case, fitted with wooden plugs, are shown in the illustration.

f. Figure 138 shows a more elaborate improvised explosive charge, several of which were recovered in Korea. Each consisted of a wooden box containing 12 U.S. ½-pound TNT blocks in a rear compartment. Two middle blocks in the front top layer had been opened and enough of the TNT removed so that the heads of two concussion grenades, with friction pull fuzes and blast-

ing caps inserted, could be emplaced. Removed TNT was then packed over the grenade heads and around the projecting fuzes. Slots cut in the box partition permitted fuzes to project through. Trip-wires were attached as shown. Charge was designed to fire when trip-wire was pulled or when box lid was fully closed.

95. CCA and NKA Boobytraps

a. Enemy boobytraps in Korea were encountered in buildings, in abandoned foxholes, in paths, and on abandoned equipment. Some buildings were boobytrapped by attaching wires to the doors and connecting the wires with pull fuzes in explosive charges which ranged in weight from several pounds to 300 pounds. Because of the comparatively few western type buildings in Korea and the enemy's knowledge that U.N. forces favor such buildings for command posts and similar uses, boobytrapping of all such buildings abandoned by the enemy was expected.

b. In Korea the enemy used both concussion and fragmentation grenades as base charges for boobytraps. These appear to have been the most popular type of ammunition for such use. Three versions of their use are shown in figure 139.

(1) Grenade inserted in tin can, is shown in top illustration.

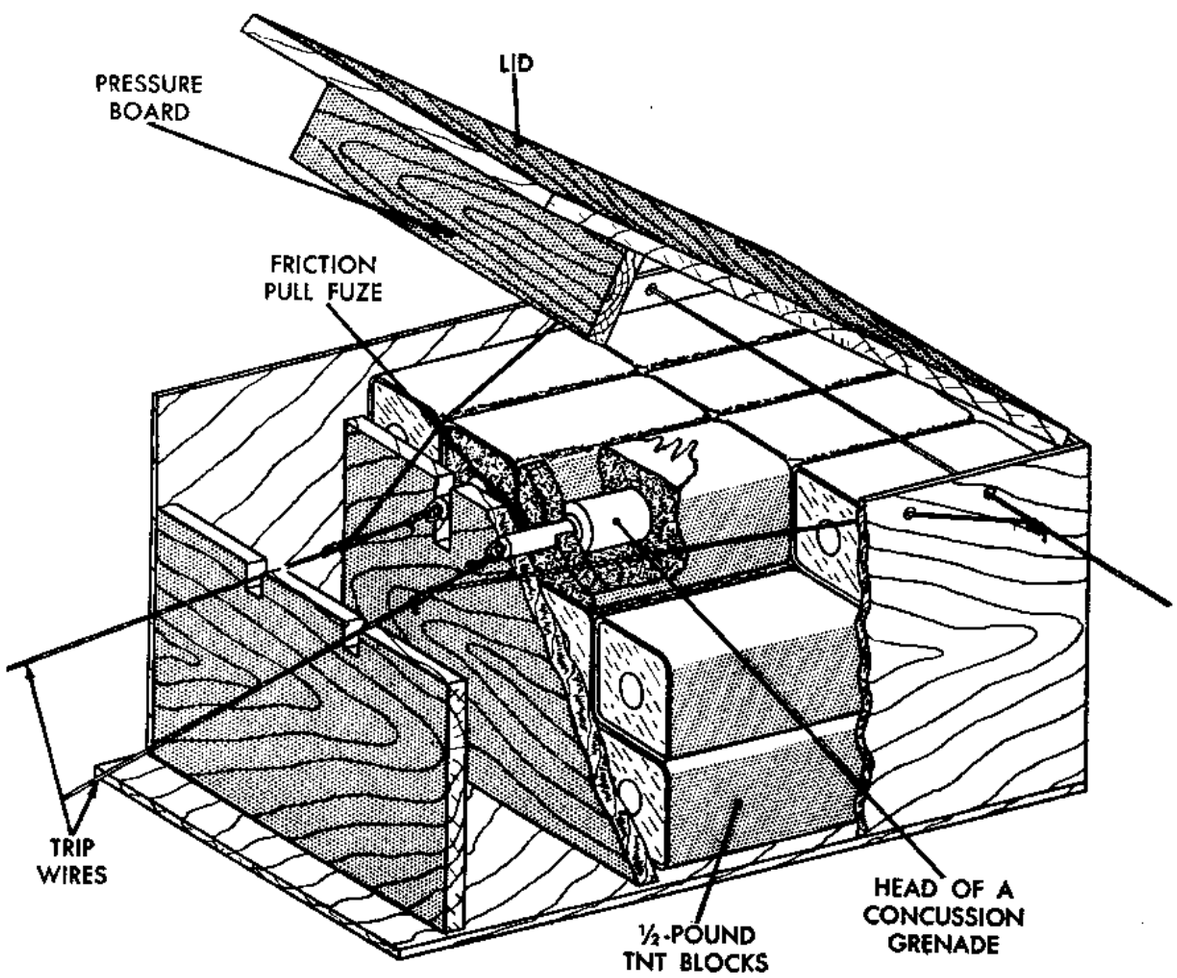


Figure 138. Improvised pressure and trip-wire charge.

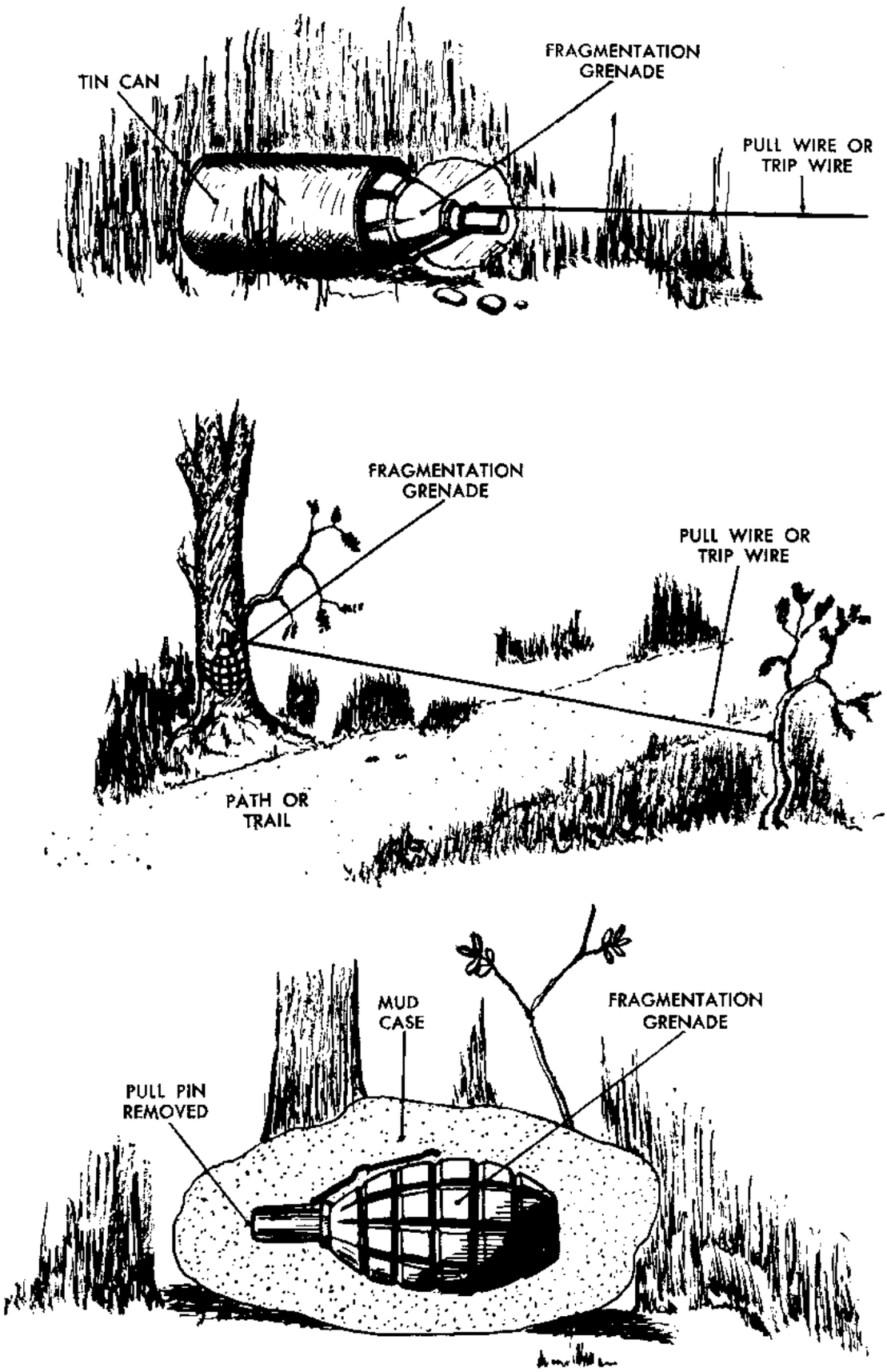


Figure 139. Boobytraps and the hand grenade.

Can holds fuze lever in check, permitting withdrawal of safety pin. Can is anchored in concealed location; and when pull on trip-wire withdraws grenade, fuze lever fires it.

(2) Fragmentation grenades were found tied to trees or stakes, and fitted with trip-wires (middle illustration). Anchored trip-wire extracts pull pin of fuze when trip-wire is pulled.

(3) A more ingenious and quite effective use of a grenade is shown in the bottom illustration. A grenade, with pull pin in place, is coated with mud so that the pull pin ring is exposed. When the mud dries, pull pin is withdrawn, arming grenade. Mud hardens enough to hold grenade handle in place, and grenade cannot detonate until its mud case is broken. This camouflaged charge can be employed in many boobytraps.

c. A type of boobytrap encountered several times in Korea is shown in figure 140. This trap consisted of an explosive charge (believed to have been a powdered explosive) in a cone-shaped

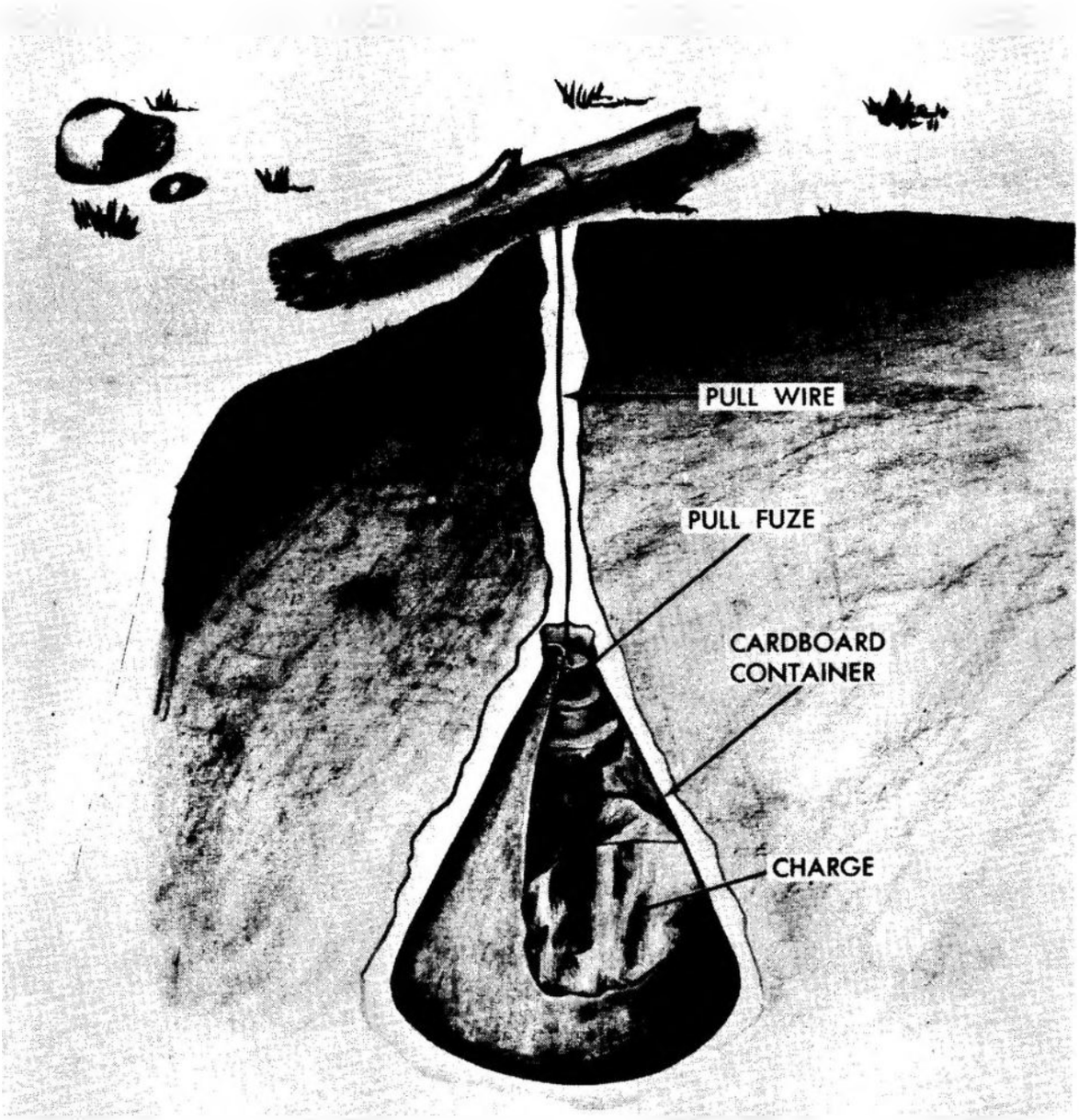


Figure 140. NKA boobytrap.

Figure 141. Tangled wire boobytrap.

heavy cardboard container. A pull type fuze with detonator attached was inserted in apex of charge and attached to length of wire which either rested loosely on the ground or was attached to a piece of firewood.

d. In the village of Pyonchang an entanglement of telephone and electric wires was found spread across a road (fig. 141). Close examination revealed that many grenades, of several makes and types, were anchored in the roadbed and also on shoulders

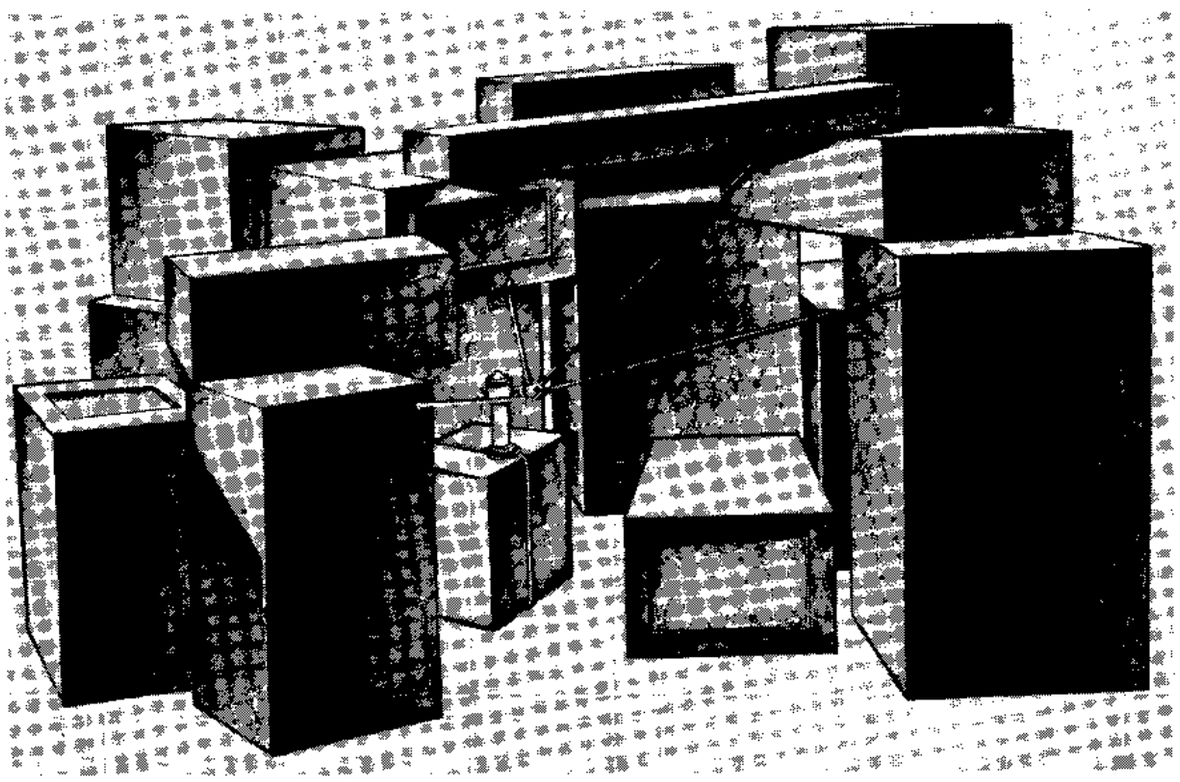


Figure 142. Explosives pile boobytrap.

of the road. A wire, fastened to the safety pin or pull ring of each grenade, led back to the maze of wire in the road. Had this entanglement of wire been disturbed, one or more grenades would have been detonated.

e. Another type of boobytrap found in a pile of abandoned ammunition is shown in figure 142. This boobytrap consisted of 50 cases of explosives and ammunition piled around a fuzed charge. This charge consisted of a standard U.S. trip flare, with a No. 6 non-electric blasting cap attached, and this assembly inserted in a cardboard container holding 6 pounds of TNT. The assembled device was held together by wire. Wires attached to trigger of trip flare led to several other cases in the pile. Movement of any of these cases would detonate charge.

f. When the enemy retreated northward in Korea, they booby-trapped many Korean peasant huts (fig. 143). Taking advantage of the huts' peculiar construction involving a corner fireplace and floor ducts, explosive charges consisting of grenades or similar items were concealed in the foundation corners adjacent to fireplace opening. Fire started in the fireplace would soon detonate explosive charge.

g. A favorite winter boobytrap (fig. 144) consisted of placing a hand grenade, with safety pin removed, under dead tree branches and scrap lumber which could be used for firewood. Lifting of the firewood detonated grenade.

h. Another simple trap consisted of a ceramic jar in which,

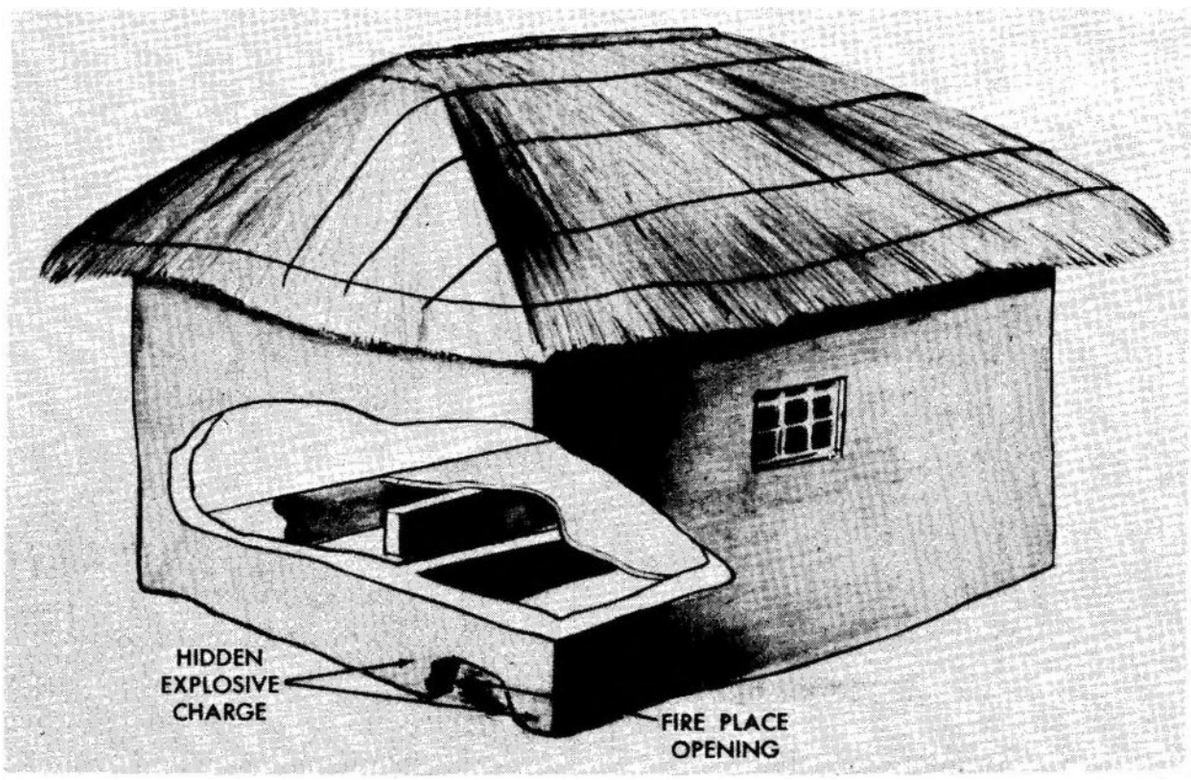


Figure 143. Korean peasant hut trap.

Figure 144. Firewood boobytrap.

were inserted blocks of TNT, amatol, or picric acid tied around a potato masher type of hand grenade. Trip-wires fastened to stakes held the jar in position. Any movement of the jar detonated its charge.

Section V. JAPANESE MATERIEL

96. Equipment

a. During World War II, the Japanese Army was limted in its development of war supplies by a shortage of metals. All through the war they depended largely upon materials such as wood and ceramic products to provide containers for mines and explosive charges. Since defensive warfare did not develop until late in the war, a requirement for boobytrap components apparently was not foreseen in sufficient time to permit of special development. When use of boobytraps assumed tactical importance, their designs were left to army field commanders where

techniques in improvisations varied materially. Hand grenades, mortar and artillery shells, bombs, bangalore torpedos, and improvised containers were used for the base charges of boobytraps.

b. It was common practice for the Japanese to boobytrap any abandoned piece of equipment containing an electric circuit — vehicles, searchlights, generators — by inserting an electric detonator connected with an explosive charge into the electric circuit. Special instructions issued to Japanese soldiers on boobytrapping techniques included examples of trip-wires used in trails or attached to doors, windows, road blocks, souvenirs, and corpses. Pressure traps placed under ground and below floorboards were described. Also included were instructions on making boobytraps from bottles, trucks, empty tobacco tins, parasols, bamboo cylinders, canes, kerosene tins, flashlights, match boxes, clocks, vehicles, and other items that had to be abandoned.

97. Japanese Boobytraps

a. There is little that is new or unusual about Japanese boobytraps. They employed familiar principles and methods. Good at copying, they imitated any device that could be produced advantageously.

b. Type 99 magnetic mine (fig. 145) was used occasionally as a pressure-operated boobytrap. Installed beneath a loose board with fuze upright and safety pin removed, the mine could be set for instantaneous detonation by removing the delay pellet and replacing it with a detonator. Action within fuze could be initiated by pressure of a hand.

c. The pipe boobytrap previously shown in figure 114 was a Japanese invention. Unscrewing of pipe stem released a spring-loaded striker which fired a percussion cap and main charge. When safety screw was in place pipe stem could not be unscrewed.

d. A bottle boobytrap (fig. 146) was designed primarily for its incendiary effect. When the bottle trap was shaken or when it was tipped over, a chemical mixture in the cork caused the sulphuric acid to explode, breaking the bottle and igniting the benzine or other inflammable liquid within the bottle.

e. Japanese use of hand grenades as boobytraps was quite extensive. With pin and cap removed, some types functioned as pressure-operated traps when buried just below the surface or left lying on ground among brush or rubble where they might be stepped upon or kicked by an enemy soldier.

f. Another type of grenade boobytrap favored by the Japanese is shown in figure 147. A 15-inch tube of steel, iron, bamboo, or similar material was suitable for use so long as a grenade would

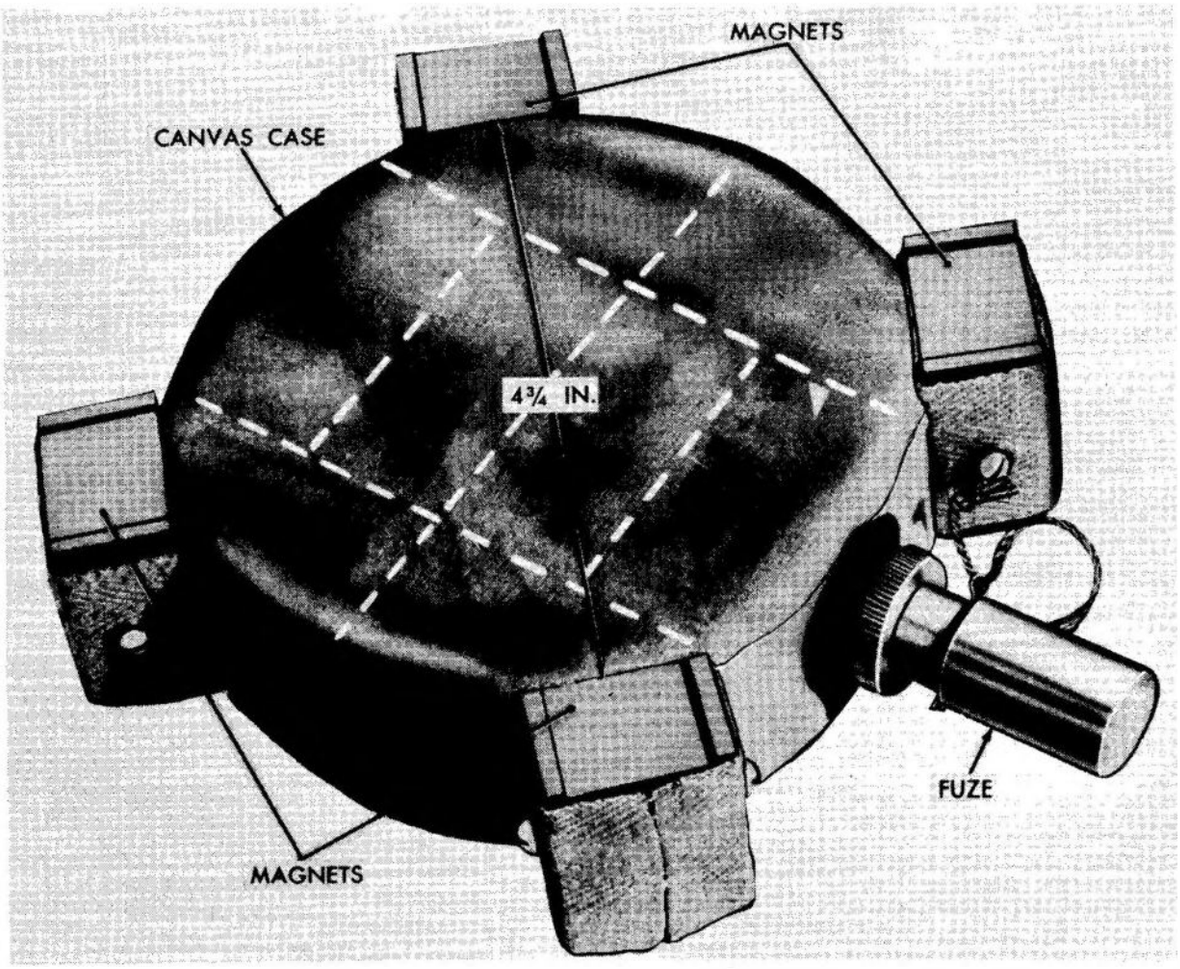


Figure 145. Japanese antivehicular magnetic mine, type 99.

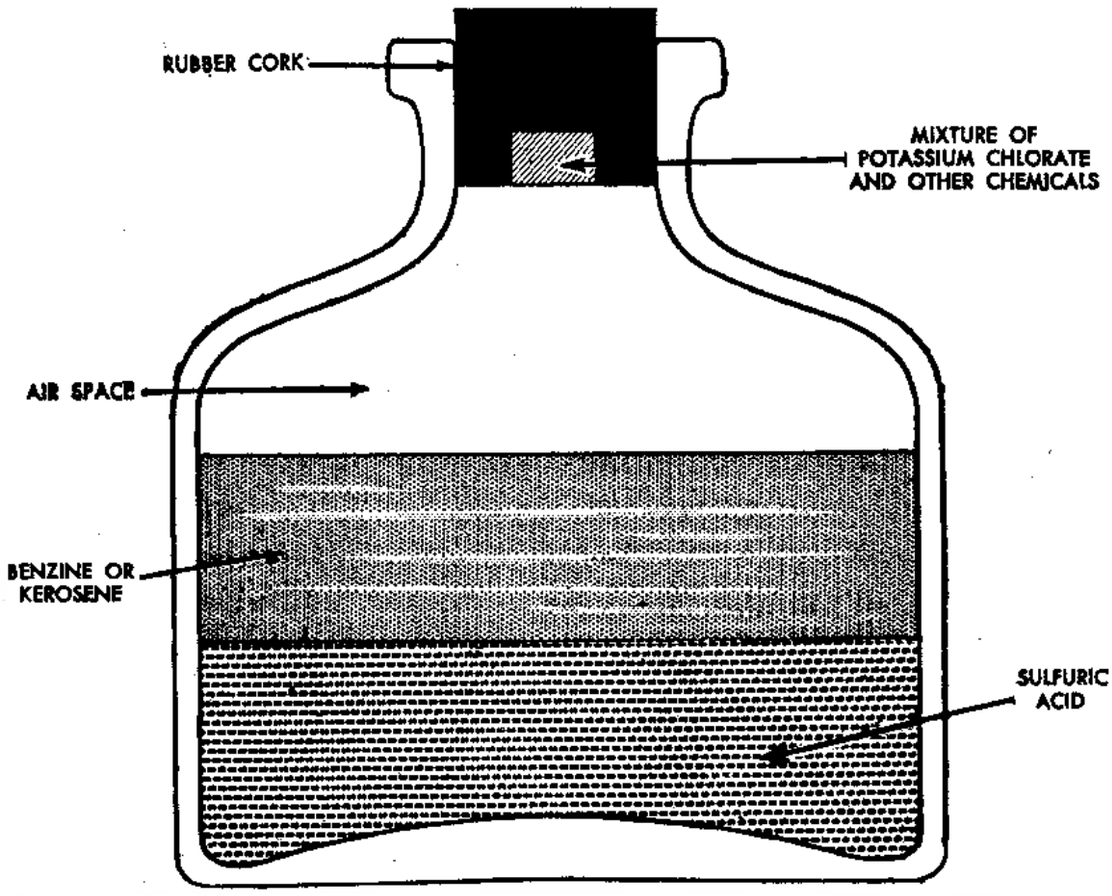


Figure 146. Japanese bottle boobytrap.

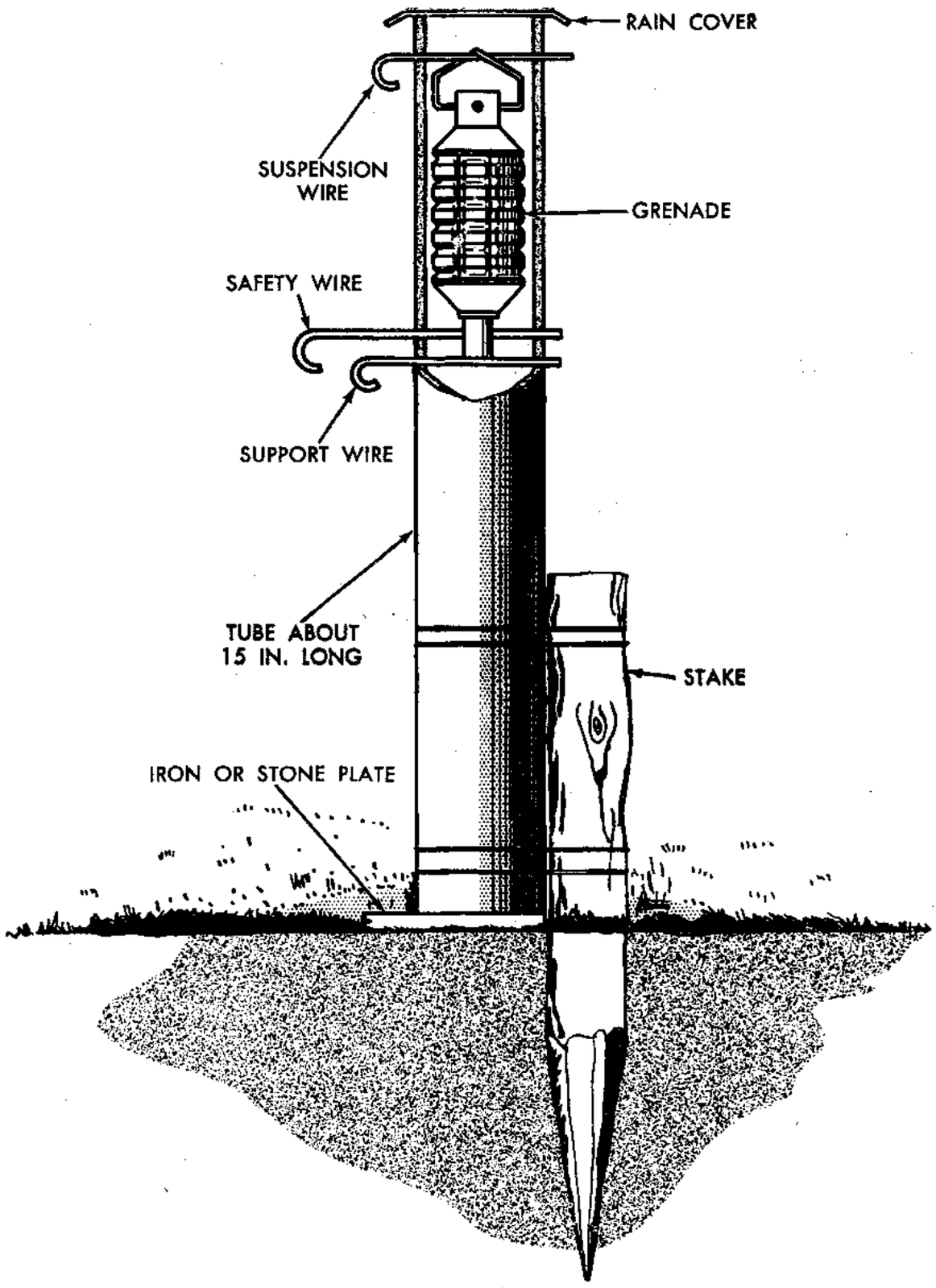


Figure 147. Type 91 hand grenade boobytrap.

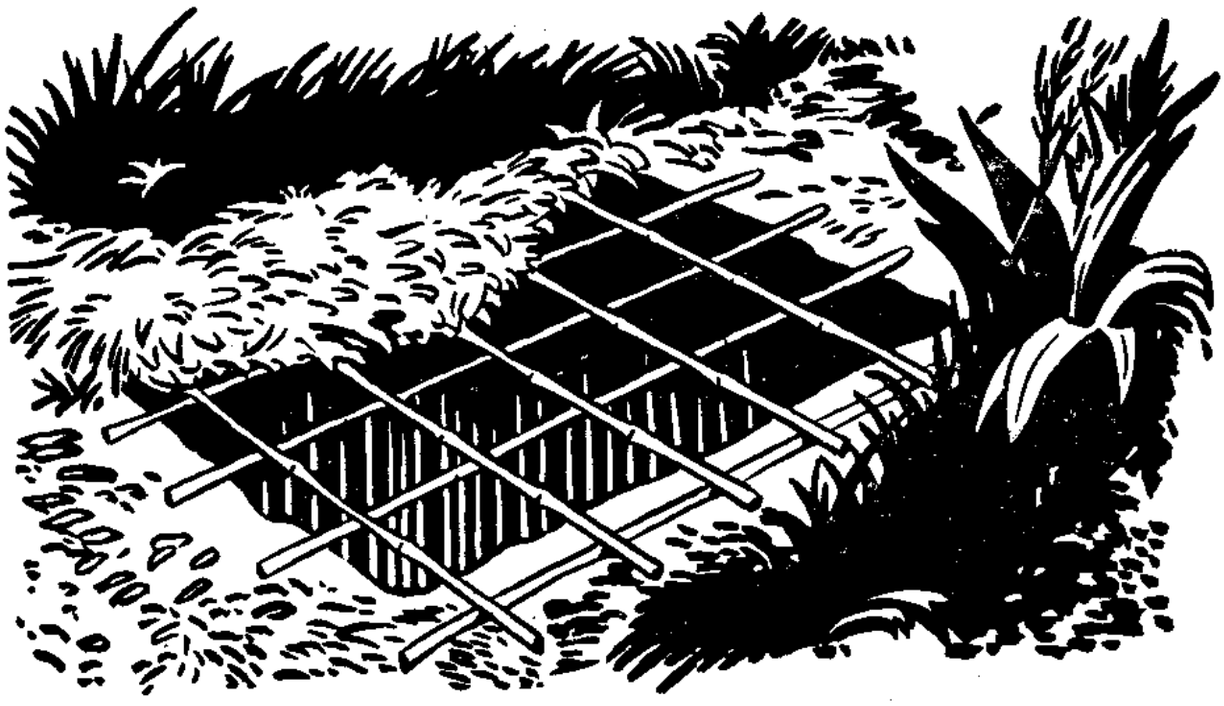


Figure 148. Panji Jungle trap.

slide loosely down its hollow center. Three holes drilled through the tube accommodated safety, suspension, and supporting wires. After the support wire and safety wire were removed, the suspension wire held grenade in top of pipe which in turn was attached to a stake or tree. When suspension wire was removed by pull on a trip-wire the grenade dropped to the bottom igniting its fuze, detonation of the grenade occurring from 4 to 7 seconds later.

g. Needle-sharp bamboo spikes, called *panji* (fig. 148), were among the most treacherous weapons employed in jungle warfare. Used by the Japanese as boobytraps to impede the advance of an attacking force, they were buried along paths or trails, concealed with a flimsy lid of bamboo lattice, and covered with bamboo creepers, mud, or leaves to blend with natural terrain. Sharp bamboo spikes were also buried in paths and approaches to stream crossings out of sight and protruding just enough to pass through a soldier's foot.

h. Another form of jungle boobytrap is the bamboo whip (fig. 149). A 3-inch bamboo pole can be bent back across a jungle path in such a way that when released, the force of its blow will kill a man. More effective results can be insured by attaching panji spikes at the end of whip. Bamboo creeper or taut wire holds a whip in position. Trip-wire, when disturbed, releases the whip. Full information on building panji traps and bamboo whips is given in FM 5-15.

Figure 149. Bamboo whip.

CHAPTER 13

TRAINING

98. Objectives

a. Training of all military personnel for combat duty will include detection and employment of boobytraps in combat. Such instruction will cover all potential dangers inherent in boobytraps. Soldiers will be taught how to avoid danger of boobytraps in combat and how to appraise their tactical value in defending military positions.

b. Selected military personnel will be given extensive specialized training to prepare them for assignments as boobytrap technicians. In a combat area, such personnel are normally assigned to engineer and pioneer infantry units. Training of boobytrap specialists will be given at engineer or similarly specialized training establishments. Specialist instruction will cover thoroughly all features of the intricate and delicate mechanisms used in boobytraps. It will teach a technician to install and neutralize all kinds of boobytraps, whether they be locally improvised or of foreign or domestic manufacture. Boobytrap training objectives for other soldiers will emphasize problems involving protection against boobytraps and the means whereby they may avoid delays usually caused by enemy-installed boobytraps.

c. Training information provided in this manual is directed primarily towards the average soldier's needs. It does not offer a curriculum for training a boobytrap specialist, as his knowledge must be based upon current and future standards, a field in which changes are frequent.

99. Program of Instruction

a. Boobytraps and mines are so closely related that a complete separation in training activities is difficult. Boobytrap training, given after basic training in mine warfare, adds interest to both courses and provides an essential bond between the two activities.

b. Table II provides a guide for training soldiers in boobytrap activities. A course of training based upon the subjects listed will be adequate to teach soldiers all potential dangers in booby-

traps; the precautions that must be observed to avoid enemy traps; and techniques prescribed for installing and neutralizing simple boobytraps.

100. Training Devices

a. Components. Knowledge of explosive components and their application in boobytrap construction can be realistic only through exposure of a student to all items used. Require every soldier to handle all types of explosives, blasting caps, detonating cord, safety fuse, fuse lighters, detonators, firing devices, destructors, activators, and similar items. Explain why explosives are hazardous when improperly used or handled. At the same time emphasize how safe all such items are when established procedures are followed in handling, storing, carrying, installing, and removing them. Whenever students are required to handle explosives, provide adequate segregation to hold casualties to a minimum in the event of an accident.

Table II. Sequence of instruction

Phases	*Subjects*	*Periods*	*References*
1	Principles of employment.	Definitions ..... Boobytrap hazards. Safety.	FS 5-27 GTA 5-25
2	Principles of mechanisms.	Firing devices .... Main charges.	
3	Care preservation, and employment.	Handling ..... Transportation. Use. Procedures. Detection. Neutralization.	TF 25-394
4	Demonstrations ...	Minefields ..... Structures. Terrain. Areas.	FM 20-32
5	Foreign materials.	European ..... Asiatic.	TM 5-223-A TM 5-223-B TM 5-223-C TM 5-223-D
6	Field problems ...	Employment ..... Detection. Neutralization.	

b. Mechanisms. Cover mechanical items such as firing devices in sufficient detail to explain how they function in detonating an explosive charge. This provides an opportunity for a student to learn all about safety mechanisms, the principles involved in their employment and how they may become ineffective through maladjustment or deterioration.

c. Demonstrations. Using examples, demonstrate all mechanical devices and all employment techniques to a class before individual handling is permitted. In this manner an instructor may cover thoroughly all important facts pertaining to every item.

d. Models. Use cutaway models built to large scale for classrom demonstration. Models that spring into action to simulate real mechanisms are of special value when explaining the functions of such mechanisms as firing devices. Value of models of this type is increased when something spectacular occurs at the instant detonation takes place. Whistles, bells, lights, percussion caps, and similar devices may be installed in a classroom to provide variety to the unexpected. Spectacular demonstrations make lasting impressions on the memory and keep a student body alert to the subject under discussion.

e. Training Films. A great deal of information can be given during a brief period by using training films which are available and can be obtained for training purposes. Whenever possible, show a suitable film to a class before they are assigned to actual handling of live explosive components used in boobytrap construction. Make certain such preliminary training instruction is adequate to prepare each student for safe handling of explosives.

f. Dummy Boobytraps. Provide demonstrations which show methods prescribed for assembling boobytraps. Use inert components during such demonstrations, as well as when a student first tries his hand at making a boobytrap. When such demonstrations are made, divide a class into small groups so that each student may see clearly and handle the samples being used. Have each soldier make every prescribed assembly under guidance of an instructor until his competence is proved.

g. Realistic Training. Provide ample means to give each soldier a chance to examine the components he will use. Demonstrate the effect of explosives. Fire a percussion cap, detonate a mine, mix the program with films, demonstrations, and noise. A soldier must be taught to respect the explosives he uses in assembling boobytraps, but never to fear them while they are being properly handled. SR 385-310-1 prescribes safety precautions for use of ammunition in training.

101. Foreign Materiel

a. The foremost purpose of a training program is to teach American soldiers how to outwit an enemy that places boobytraps in his path. Teach all soldiers what foreign boobytraps may be expected to look like, how they work, and tactical methods favored by a potential enemy. Provide opportunities to handle and study foreign-made mechanisms to see how they can be neutralized, and when unusual dangers are present. Let every soldier recognize and appreciate the fact that an enemy is capable of employing contraptions as dangerous and ingenious as any he may fashion.

b. Many foreign boobytraps are made of wood. Sufficient data is provided in this manual for any competent individual to make a fair imitation of any foreign wooden device, substituting from national stock items when components too difficult to make are needed. Prepare samples in abundance for use in synthetic combat areas. Detonate samples during demonstrations and, using paper screens strategically placed, show the extent of damage resulting from both large and small size traps.

102. Demonstrations

a. A feeling of reality is necessary to obtain the most effective boobytrap training results. A liberal supply of equipment, with a wide variety in methods of application, will be found most useful.

b. Suitable training requires extensive demonstration facilities. Work and study performed in a classroom is not enough. When a student's classroom training has taught him how, where, and why boobytraps are used, his training must be carried into the open where battle conditions can be simulated.

c. Provide areas in which may be found a variety of situations where boobytraps would be expected under similar circumstances in a combat zone. Buildings, roads, lanes, defiles, and similar places give reality to a boobytrap area. Make every effort to keep such ground policed to retain as much as possible the appearance and eeriness of a combat area.

d. Buildings of several types and sizes are desirable for boobytrapping exercises in order to stimulate the imagination of a soldier. Provide him with opportunities to produce unorthodox and unexpected achievements. Challenge his imagination.

e. Livelier interest is obtained when a soldier designing a trap is provided with a means to embarrass its victim. Many different types of disconcerting signals make such devices possible. A battery used as a central source of power or an electric light cir-

cuit may sound horns, ring bells, blow whistles, light bulbs, set off firecrackers, or produce many other kinds of annoying acts or sounds.

f. Traps placed in an area in advance of a searching party should be connected to some noisy contrivance designed to startle its victim. Every overt act by an unwitting soldier must be announced by an instantaneous raucous signal. Every signal of this nature indicates another topic for class discussion. Students learn of the error, discuss the problem, and find a correct solution.

g. Classes should be divided into two groups for demonstration purposes. One group may boobytrap one area, while the other group boobytraps another. Switch areas and let the search begin.

103. Penalties

a. Careless or thoughtless acts on the part of soldiers can be evaluated best by appraisal in terms of battlefield casualties. Every time a student springs a trap, an instructor should assess the damage that would result from a similar mistake during combat.

b. A system of penalty tags may be used to mark an offender. Different colors such as red, yellow, and white may be used to indicate different degrees of errors.

104. Training Equipment

a. A considerable amount of boobytrap training equipment is authorized for issue. ORD 3 SNL R-7 lists many such items available from national stocks. Practice mines and fuzes may be obtained and mechanical firing devices can be rendered inert for

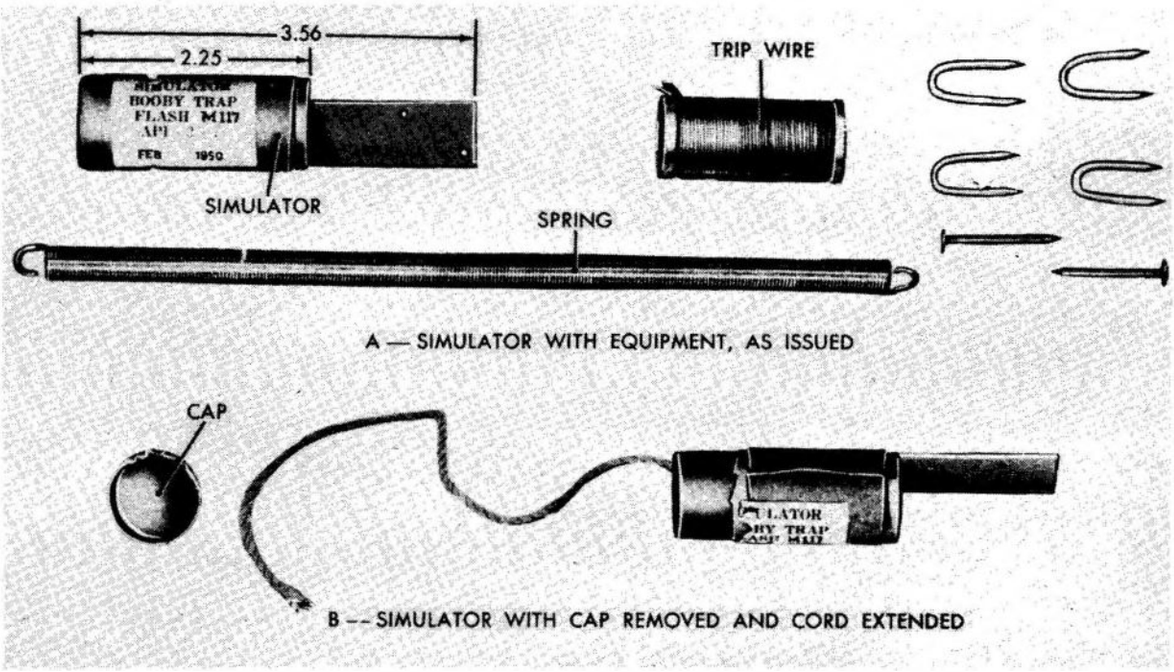


Figure 150. Simulator, boobytrap, flash, M117.

demonstrations by firing percussion caps. Available also are boobytrap-simulating devices that flash, illuminate, or whistle when a boobytrap is sprung. Illustrated in figure 150 is the flash mechanism. Those which illuminate or whistle are quite similar in design.

b. Reclaimed materials may be had from many sources. A salvage yard may produce many novel items to be used in booby-trapping demonstrations. Discarded automobile horns, windshield wiper motors, and electrical appliances are samples of the kind of things an ingenious designer may use.

APPENDIX I

REFERENCES

FM 5-6	Operations of Engineer Troop Units
FM 5-15	Field Fortifications
FM 5-25	Explosives and Demolitions
FM 5-34	Engineer Field Data
FM 5-35	Engineers' Reference and Logistical Data
FM 9-40	Explosive Ordnance Reconnaissance and Disposal
FM 20-32	Employment of Land Mines
FM 21-105	Engineer Soldiers' Handbook
FM 31-50	Combat in Fortified Areas and Towns
TM 5-223A	Soviet Mine Warfare Equipment
TM 5-223C	German Mine Warfare Equipment
TM 9-1900	Ammunition, General
TM 9-1901	Artillery Ammunition
TM 9-1904	Ammunition Inspection Guide
TM 9-1905	Ammunition Renovation
TM 9-1940	Land Mines
TM 9-1910	Military Explosives

APPENDIX II

GLOSSARY

Antilift device—Mechanism used in boobytrapping that fires an explosive when primary object is lifted.

Antitilt device—Mechanism used in boobytrapping that fires an explosive when primary object is tilted.

Area Clearance—Noncombat operation involving clearance of mines and boobytraps.

Arming—Action involving removal of safety devices or turning of components parts that rearranges elements of an explosive item, such as a fuze or firing device, from a safe condition to a state of readiness for initiation.

Blasting cap—Small cylindrical case with thin wall in which is inclosed a sensitive explosive such as mercury fulminate or crystalline PETN, used as a detonator to set off another explosive charge. There are two types in military use, one being fired by an electric current and the other by flash from a safety fuse or percussion cap.

Boobytrap—An explosive charge which is exploded when an unsuspecting person, disturbs an apparently harmless object, or performs a presumably safe act.

Booster—High explosive element, sufficiently sensitive to be actuated by a small explosive element in a fuze or firing device, and powerful enough to cause detonation of a main explosive charge.

Breaching operations—Assault operations through a minefield or fortification.

Bursting charge—Charge of high explosive that breaks the casing of a shell, grenade, rocket, or bomb to produce demolition, fragmentation, or chemical action.

Defuzing—Removing a fuze or firing device from a boobytrap or mine.

Delay element—Device installed in a fuze or firing device to delay progress of firing action.

Detonator—High explosive element used in an explosive train to create or transmit a detonation wave to a booster or a main charge of high explosives.

Disarming—Act or process whereby explosive items are made safe by proper replacement of all safety devices.

Firing device—A mechanism designed to initiate a train of fire or detonation in boobytraps, mines, or demolition charges. It is generally a separate item of issue. When fitted with a nonelectric blasting cap it may be used as a mine fuze, antilift device, or to set off prepared explosive charges.

Fuse—(time or safety)—Flexible, waterproofed fabric tube containing a filler of black powder that transmits a flame to fire an explosive charge or nonelectric blasting cap. Burning slowly at a uniform rate, safety fuse allows a person firing a charge to reach a place of safety before detonation occurs.

Fuse lighter—Device used to ignite a safety fuse.

Fuze—A device used to initiate a detonation under the conditions desired.

Main charge—Primary or principal charge of high explosive used in a boobytrap or similar explosive item.

Missile—Grenade, shell, bomb, rocket, or guided missile; any lethal object hurled through the air.

Organic safety—Component part of a device that prevents accidental or premature firing when part is in its proper place.

Primer—Device used to initiate functioning of an explosive or igniter train.

Probing tool—Issue mine probe, bayonet, or improvised stiff wire used to locate or search around mines and boobytraps for concealed mechanisms.

Protector tube—Cardboard or plastic covering for standard firing device base to provide protection during a storage or transit.

Propellant—An explosive which, upon burning, propels a bullet or projectile from the tube of a gun, or propels a rocket or missile in flight.

Safety pins—Split pins, cotter pins, nails, and pieces of wire that are both solid and stiff, are all suitable for use as safety pins in fuzes and firing devices.

Separate-loading ammunition—Ammunition for which the projectile, propelling charge, and primer are loaded into a gun separately.

Standard base—A coupling equipped with standard threads used to join firing devices with standard explosive charges. One end is provided with a hollow shafted prong to which may be crimped a nonelectric blasting cap. The hollow shaft leads to a chamber on the other end which is formed to hold a percussion cap. Employed in a boobytrap, percussion cap is fired by firing device, thereby exploding nonelectric cap, which, in turn, detonates any explosives charge in which it is inserted.

	Paragraphs	Page
Activators	22	26
Ammunition:		
Artillery	45	68
Color guide (table I)		34
Enemy	29	33
Grenade	43	64
Mortar	44	64
Standard	27	33
Ammunition dump boobytrap	82*b*	128
Artillery shell, explosive train	16	15
Authority to employ boobytraps	10	8
Authority to install boobytraps	10	8
Bamboo whip boobytraps	97*h*	166
Bangalore torpedoes	31	37
Bed boobytrap	76*d*	115
Blasting caps:		
Crimping	46*g*	72
Electric	21*a*	23
Non-electric	21*b*	24
Boat boobytrap	93*e*	151
Body armor	63*b*	89
Bombs	45*i*	70
Boobytraps, definition	4*a*	4
Boobytraps in defense	53*c*	77
Boobytrapped mine	14*d*, 70, 71	13, 101, 103
British boobytrap equipment	88	145
British boobytraps	89	145
Candy bar boobytrap	85*k*	139
Canteen boobytrap	85*i*	138
CCA and NKA booby trap materials	94	157
CCA and NKA boobytraps	95	157
Chair boobytrap	12*a*	8
Charges, location of	55*b*	78
Charges, preparation of	55*a*	78
Clearance of boobytraps	61, 62	86, 87
Components, boobytrap	4, 13*c*	4, 11
Construction of boobytraps	17	15
Delay-action mechanisms	67*f*	96
Delay detonators	36	42
Delaying elements	16	15
Demolition materials	25	32
Destruction of boobytraps in place	67*c*	95
Destructor:		
HE, universal, M10	22*b*	29
Use with boobytraps	22*a*	26
Detection methods	64	92
Detonating cord	18*c*, 32	18, 37
Disassembly of boobytraps by hand	67*c*(3)	95
Disassembly of components	15*b*	14
Disposal of explosives	69	99
Disposal teams	62*b*	87
Door boobytrap	74*c*	109
Drawer boobytrap	76*b*	114
Electrically-operated boobytraps	67f (1)	96
Explosives	5, 18	4, 17
Explosive train	16	15
Fireplace boobytrap	75*c*	111
Fireplace boobytrap	95*g*	161
Firing device:		
Definition	4*d*	4
Delay type, M1	39	51
General	26	33
Operation	20	20
Pressure-release type, M5	41	37
Pressure-type, M1A1	37	44
Pull-friction type, M2	42	61
Pull-release type, M3	40	54
Pull-type, M1	38	47
Flammable substances	47	73
Floor boobytrap	75*e*	112

	Paragraph	Page
Furniture booby-traps	76	114
Fuse, safety	33*a*	38
Fuse lighters	34	40
Fuze, definition	4*c*	4
Gateway boobytrap	73*a*	107
German boobytrap equipment	90	145
German boobytraps	91	146
Grapnels	63*d*	90
Grenade boobytraps	73*a*, 75c, 80*g*, 95*b*, 97*f*	107, 111, 157, 163
Handling of explosives	46	72
Hazards, boobytrap	13*a*	10
Improvisations, boobytrap	13*c*, 29, 86, 87	11, 33, 141, 142
Incendiaries, use of	24*c*	32
Initiating action of boobytraps	19	18
Installation of boobytraps	8*b*, 58, 59	7, 80
Japanese boobytrap materials	96	162
Japanese booby-traps	97	163
Jerrican boobytrap	91*e*	149
Knife boobytrap	78*a*	116
Korean war booby-traps	7*c*, 95	7, 157
Lamp boobytrap	76*c*	114
Laying booby-trapped mines	14*d*	13
Lumber boobytrap	82*c*	129
Main charges for boobytraps	24	32
Manufactured booby-traps	4*b*, 83, 84, 85	4, 133, 134
Marking signs, triangular, boobytrap	60*d*, 63*g*	86, 92
Mine, firing chain	16	15
Mine, typical	70*a*, *b*	101
Neutralizing boobytraps	67, 68*e*	94, 98
NKA boobytraps	95	157
Objects suitable for boobytrapping	78	116
Open door boobytrap	74*c*	109
Panji jungle boobytrap	97*g*	166
Parasol boobytrap	85*m*	139
Photoelectric cell boobytrap	67*f*	96
Pipe boobytrap	85*g*	137
Pistol ground spike	91*c*	147
Planning an operation	57	78
Potato masher boobytrap	91*b*	147
Power system boobytrap	93*d*	152
Priming adapter	35	40
Principles of boobytrap warfare	8*a*	7
Probes	63*e*	91
Rail spike boobytrap	93*b*	151
Ration box boobytrap	86*b*	142
Ration can boobytrap	86*b*	142
Reconnaissance	56	78
Recording of boobytraps	9*b*, 60	8, 82
Removal and destruction of boobytraps	68	96
Reporting of boobytraps	60	82
Responsibilities of a commander	58	80
Responsibility for installation	58*d*	80
Roadside boobytrap	80*b*	123
Safe distances	14*d*	13
Safety devices	23, 46*f*	31, 72
Safety	14, 15	12, 13
Safety fuse	33	38
Searching methods	65, 66	92, 93
Shell boobytrap	93*c*	152
Shell case boobytrap	94*c*	156
Shell, explosive contents	45*g*	70
Shoe boobytrap	86*b*	142
Simulators boobytrap	104*a*	172
Soviet boobytraps	93	151
Soviet boobytrap equipment	92	151
Stockpile boobytrap	82*c*	129
Storage of exlosives	46*e*, *j*, *l*,	72, 73
Stove boobytrap	76*c*	114
Structural framework boobytraps	75	110

	Paragraph	Page
Tangled wire boobytrap	95*d*	160
Telephone boobytrap	76*b*	114
Telephone headset boobytrap	85*h*	138
Tire boobytrap	76*d*, 80*f*	115, 125
Tools and equipment	63	89
Toxic substances	48	73
Trail and highway demonstrations	102	171
Training devices	100	169
Training equipment	104	172
Training with foreign material	101	171
Transportation, explosives	50	74
Utilities, boobytrapping	77	115
Vehicle ignition boobytrap	82*d*	129
Vehicle seat boobytrap	82*d*	129
Wall boobytrap	75*b*	111
Water barrel boobytrap	73*b*	107
Water well boobytrap	73*a*	107
Wheelbarrow boobytrap	91*f*	149
Whistle boobytrap	85*j*	138
Window boobytrap	74*d*	110
Woodpile boobytrap	93*f*	153

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